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EXPLORING THE EVERYDAY

Ethnographic Approaches to Literacy and Numeracy

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Nirantar

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INTRODUCTION

Teachers teach, students learn. We take it for granted that education is about one group of people imparting knowledge to another. We also suspect that nothing is ever that simple. But when teachers are involved in the practice of adult education, we can be certain that a much more complex process is about to unfold.

This publication is an account of such a process, involving a diverse network of adult-education practitioners working in South Asia, and a group of academics and trainers based in the U.K. The initiative described here sprang from the interaction between Nirantar, a feminist organisation with a long experience of adult-education work among rural women in India, and Uppingham Seminars in Development from U.K.

Nirantar had shared with the Uppingham group some of the intricacies involved in bringing an educational curriculum to women who, while unschooled, routinely drew on a complex, even sophisticated, body of local knowledge based on their collective life experiences. Nirantar had experienced difficulties, but also a sense of a genuinely empowering opportunity, in the dissonance between the cultural knowledge of local women and their own adult-education curriculum.

The conversation grew from such anecdotal origins to a discussion on how to approach the knowledge base of learners. Uppingham Seminars and Nirantar worked on the possibilities of using ethnographic approaches to study the indigenous beliefs and values that structure learners' understanding and experience of literacy and numeracy and to see how such knowledge could be used to develop curricular material. After a few short exchanges, which included an in-house workshop with Nirantar and a couple of field visits by Uppingham members to Nirantar's field programme, a more structured capacity-building intervention for practitioner organisations began to evolve. Nirantar approached the Asia Pacific Bureau of Adult Education (ASPBAE) as a member of this regional organisation, and sought their involvement in drawing in other South-Asian organisations and developing the project further.

We felt the project offered new possibilities. We were keen to share this with a wider group of adult-education practitioners from South Asia, not least because adult education and literacy are low on the list of priorities within the education and development sector in this region, despite the fact that it is well known for being home to a substantial proportion of the worlds 'illiterates'. So there is always a need to create spaces and explore new approaches — in this case ethnographic approaches — that will help make programmes more effective and meaningful for the people they are meant for. Organisations in South Asia do grapple with several common issues and problems and renewing the energy around adult literacy is a shared concern.

As adult educators we are in the business of determining what is worth knowing for other adults, who are usually not from the same background and do not share the same experience base. This process is power-laden and hence the need to be self-reflexive becomes critical. Moreover, while it is commonplace to say that programmes should be contextual, how one actually goes about understanding this context, its nuances and inner workings is less well-known. This requires skills and ways of seeing that we felt ethnography could offer.

But, ultimately, as practitioners and activists we are interested in changing things for the socially and economically disadvantaged and this requires interrogating power relations and structures. From our experience of working with rural women from marginalised communities we were aware that literacy and numeracy were embedded in power relations, gender being one of them. Understanding these is an important first step in the process of transforming them. Could ethnography offer such a lens that would strengthen our work?

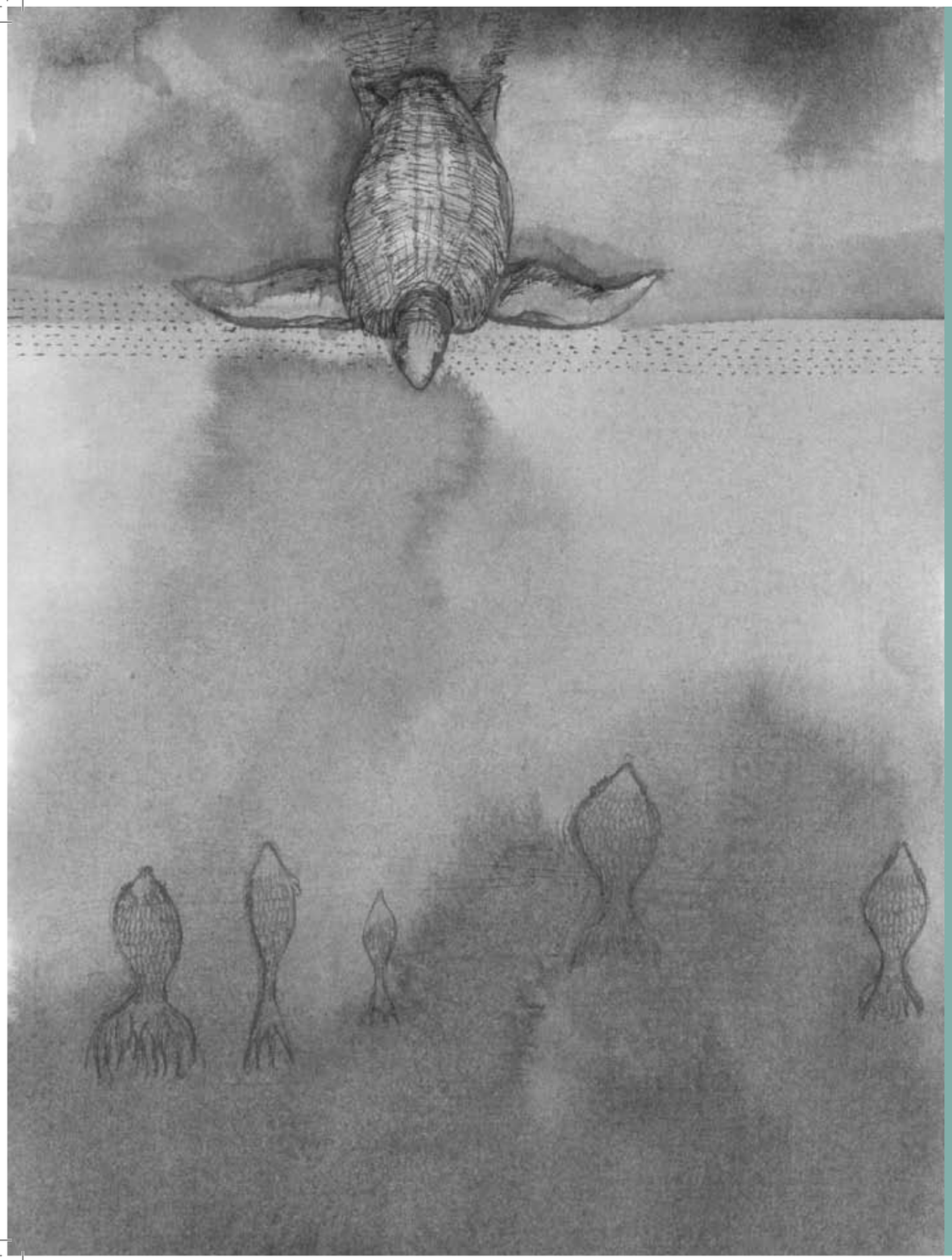
The project also focussed on numeracy, again opening up new possibilities as numeracy invariably gets short shrift and is subsumed within the larger rubric of literacy. We all know that non-literate adults calculate and use maths in their daily lives, but how and in what ways? But when it comes to teaching numeracy such knowledge is ignored and what ensues is a decontextualised transfer of technical skills, which adult learners often do not use in their everyday lives.

And, finally, as practitioners we were keen to see how developing an understanding from an ethnographic perspective could translate into changing programme design, curricular frameworks and materials — again an area that needs exploring. Even a cursory glance at adult literacy and numeracy material will reveal that it is mostly didactic and simplistic, and that it talks down to learners and privileges 'formal' knowledge. Local knowledge is rarely reflected in literacy and numeracy materials. Through this project we were hoping to not just reflect the everyday in materials but to use this knowledge to bring about change and broaden horizons.

Keeping such concerns in mind, a collaborative project — between Nirantar, Uppingham Seminars and ASPBAE — was initiated, with each partner bringing particular strengths and expertise to the venture, and with Nirantar playing a coordinating role. The resulting project, which developed both conceptual and practical skills, was implemented in three stages. The first step was a workshop held in January 2006 in New Delhi. At the workshop, facilitators Brian Street and Dave Baker introduced participants to some basic ethnographic concepts and methods. Participants also worked out research project that they would implement on returning home. During the second stage, between January and August 2006, participants did the fieldwork and wrote up their research reports. Participants reconvened in August for a second workshop facilitated by Dave Baker. Here, participants presented and discussed their research studies and used it to develop outlines for teaching-learning materials. The workshops were interactive and used a mix of 'academic' and 'practitioner' approaches, which included lectures, group work, observation, presentations, games and discussions around readings and films.

This publication describes how the project unfolded, with an eye to encouraging others to join us in what has already proved a most engaging and fruitful discussion. We hope the engagement will continue.

Nirantar, New Delhi



PART I

Crucial Concepts in Ethnography, Literacy and Numeracy

The first workshop was designed to acquaint participants with the techniques of ethnographic research, and then enable and encourage them to use those techniques to do small-scale ethnographic research of literacy and numeracy practices in specific contexts. The research was to be conducted to inform literacy and numeracy programmes, with the ultimate aim of designing teaching and learning materials using an ethnographic perspective. This is based on the basic principle of adult education — to start where the learners are, with what they can do (and are, in fact, doing) rather than with what they cannot do. While this may sound simple, practitioners do, in fact, need to be sensitised and trained in ways of finding out what learners are already doing. In Part I you will read about the main content of the sessions and deliberations at the first training workshop.

CHAPTER I

Developing an Ethnographic Perspective

Ethnography was new ground for most participants. The first step, therefore, was to discuss what an ethnographic perspective could offer adult-education practitioners. Participants were then introduced to the concepts and principles of ethnography and ethnographic research through a variety of modes, including stories, lectures and discussions, as well as core readings about ethnography and ethnographic methods. The substance of these sessions is described in this chapter.

WHY TAKE AN ETHNOGRAPHIC PERSPECTIVE?

Most adult literacy and numeracy programmes are centrally designed by formally-educated people who are at a distance from the lived realities of the participants of the programmes they try to serve. Such programmes tend to be top-down and skills-oriented and are very often not as relevant in the learners' lives as they could be. As a result, many have not been effective.

The tools and approaches of ethnography offer a more socially-grounded approach to adult literacy and numeracy programmes. To approach the development of literacy and numeracy from an ethnographic perspective means finding out what people already know, determining what their existing literacy and numeracy practices are and building on that, rather than assuming that adult learners bring nothing to a class and must be 'given' everything. It means moving away from viewing literacy and numeracy as isolated and autonomous sets of skills, and instead towards seeing them as social practices that permeate the environment and the lives of people, those for whom literacy- and numeracy-learning programmes are designed.

> "The perspectives and tools of ethnography and ethnographic research allow us to elucidate these social practices of literacy and numeracy, teasing them out of the events of daily life."

Thus ethnography-based research serves many purposes: it helps inform literacy and numeracy programmes so that they are more relevant and closely matched to the needs and practices of the learners. It also reduces the gap between the programme 'providers' and the 'receivers', transforming a provider-receiver paradigm into one of teachers and learners learning from each other. It also makes curriculum and material developers aware of the 'funds of knowledge' of learners. This process enables the learners themselves to become aware of their skills and knowledge, with the potential result of increasing their own confidence. The recognition and validation of people's existing literacy and numeracy skills and practices, which lie outside the formal realm of what is recognised as being 'literate' and 'numerate', is very empowering.

By taking an ethnographic perspective, programmes can become more than simply 'relevant'. They become integrated with people's lives, drawing upon people's experiences as a starting point and bridging the gap between programme-implementers and learners. This requires that programme-developers and curriculum-designers themselves first become learners again, learning about the learners from the learners: details about their lives, their methods of solving problems, their own systems of organisation, their literacy and numeracy practices — from how they measure grain to how they read a calendar.

Participants engaged in this project with a range of expectations, from learning about new approaches, seeking greater conceptual clarity to learning new research skills. All the participants were interested in applying what they had learnt to their own programmes: to alter programme design, to change teaching-learning interactions and to develop ethnography-based material.

> "We want to do research in order to understand, and thus be able to inform and plan our teaching and learning programmes and make such programme offerings more effective, more real and more complete, based on people's actual daily lives."

THE ESSENCE OF ETHNOGRAPHY

The essence of ethnography was introduced to the participants through discussions around a short story.

The Story of the Turtle and the Fish

There was once a turtle that lived in a lake with a group of fish. One day the turtle went for a walk on dry land. He was away from the lake for a few weeks. When he returned he met some of the fish. The fish asked him, "Mister turtle, hello! How are you? We have not seen you for a few weeks. Where have you been?" The turtle said, "I was spending some time on dry land." The fish were

a little puzzled and they said, “Up on dry land? What are you talking about? What is this dry land? Is it wet?” The turtle said, “No, it is not.” “Is it cool and refreshing?” “No, it is not.” “Does it have waves and ripples?” “No, it does not have waves and ripples.” “Can you swim in it?” “No, you can’t.” The fish said, “It is not wet, it is not cool, there are no waves, you can’t swim in it. Don’t tell us what it is not, tell us what it is.” “I can’t,” said the turtle. “I don’t have any language to describe it.”

This story helps us understand what ethnography involves. If we go to a new place, our first inclination is to describe it in terms of what it does not have. An ethnographic perspective shifts us out of this mindset and helps us firstly to ‘imagine’ things that do not exist in our own world and then to understand them on their own terms rather than to see them within our terms, as simply deficits.

The story also has special application to the fields of literacy and numeracy. Often ‘outsiders’ and ‘literate’ people describe people with whom they are unfamiliar as ‘illiterate’ or ‘innumerate’. They do not see the many literacy and numeracy practices that non-literate people are engaged in. Or, like the turtle on dry land, they perhaps lack the language to describe literacy and numeracy practices that do not correspond to the literacy and numeracy practices that they are used to. An ethnographic approach is dedicated to developing the lenses and language for describing such practices to others. One of the implications of developing such lenses would be that as practitioners we engage more closely with the participants of our programmes, respect their knowledge and use this to build the new knowledge and learning that our programmes aim to provide.

> “The story shows us that to be ethnographers means exploring local meanings, the things that make sense locally but may not have meaning in other contexts. It means suspending judgment about those other contexts, and appreciating the different ‘worlds’ that others live in and their own knowledge.”

The story enabled participants to understand the essence of ethnography, which they were then able to relate to other contexts. One participant suggested that dealing with currency conversion in a foreign country is a practical example of the difficulties that one can run into when trying to describe the unfamiliar. Suppose a Western visitor to Delhi wants to buy a shirt from a street vendor, which he is told costs Rs 200, a quantity that is unfamiliar to him. How can he convert it or translate it into something familiar, like pounds or dollars? In other words, how can the turtle describe it to the fish? In the process of trying to convert the currency of rupees into pounds, many questions naturally arise with regard to making assumptions about familiarity, about the understanding of the symbols and meanings of terms such as ‘division’, ‘decimal’, and about how to make sense of an answer.

A BRIEF INTRODUCTION TO ETHNOGRAPHY

Participants were introduced to key concepts, methods and tools in ethnography and ethnography-based research.

Ethnography began as a subset of anthropology. It draws upon some of the basic tenets of that discipline and has evolved over time, as have the theories and approaches of anthropology. Early traditional anthropology followed the same scientific paradigm as the rest of science in the 1800-1900s: The researcher was an observer who remotely and dispassionately observed or studied his ‘subjects’ — another culture or group of people — and made uninvolved interpretations on the basis of his observations. The ‘subjects’ were rarely involved in the interpretation of the ‘data’ and the researcher was assumed to be neutral and unbiased. The conclusions drawn were then often applied to a large group, the goal being to develop a model or theory about the particular group.

As the views of research evolved and began opening up to the idea of the scientist/researcher as a participant in the process as well as an observer, the field of anthropology/ethnography also began to change. There was a recognition of the need for the researcher to become more involved with her ‘subjects’ — to talk to them, learn their language, live with them, listen to their explanations of why and how they do things. Other changes have taken place in the discipline. Modern ethnography has come to be recognised as a form of study that is based on a case-study approach rather than the earlier empirically-based account of a whole society.

> “Ethnographic research, unlike some research which is solely done ‘on’ people, is research done for people and ideally with people.”

Another distinctive feature of modern ethnography is the role of reflexivity — that the perspective and world-view of the researcher cannot be ignored or elided, and that it should be acknowledged and reflected on openly by the researcher herself. In traditional ethnography, the observer was assumed to be neutral and unbiased. But every researcher (every person, in fact) sees the world through a particular set of ‘lenses’, be it culture, gender, class, education level or ethnicity, and so rather than ignore those lenses, it is the researcher’s responsibility to acknowledge them and share what she brings to her interpretation of a particular situation.

These are some key ideas related to ethnography:

Proximity/distance (participant vs observer) The researcher flows back and forth between the two perspectives of being inside the situation as well as seeing it from the outside. The researcher may be directly involved with the situation or may observe it from the outside.

Switching between modes, languages, cultures, practices, etc The ethnographic researcher must be able to switch modes easily in order to go back and forth between being an observer and being a participant.

Reflexivity The ethnographic researcher must be aware of her affecting a situation as a researcher/observer, and must track and acknowledge her own changes, perceptions and influences.

Representation of an experience to another person The ethnographic researcher must be able to explain and share the workings of a new experience with other people.

Time for ethnography Anthropologists tended to spend at least a year 'in the field'. These days, researchers using ethnographic methods may spend shorter periods in a field site. They may stay for a few months, following a class from its start to its end, or they might go to the class only for specific sessions.

Ethnographic perspective In recent years other disciplines have come to use ethnography without doing the full-fledged field study usual in anthropology. These approaches are termed 'ethnographic perspectives' in order to distinguish them from anthropology.

DOING ETHNOGRAPHY

The ethnographic approach means more than just observing and interviewing. Adopting an 'ethnographic' perspective often means identifying a problem or question to explore, and then having conversations with people about that topic, observing that environment, listening closely to what people share about themselves and their lives, how and why they do things. It doesn't necessarily involve compiling a lot of data or taking a large survey. It does mean, for example, accompanying someone as they take their fruits to the market to sell, or negotiate with a taxi driver, or collect their wages. It means uncovering and understanding the invisible details of people's lives; in our case, it meant finding out the details of people's literacy and numeracy practices that they themselves may be completely unaware of or give little credence to.

> "Ethnography is complex, although it appears simple. It is more than a set of skills: it is a set of concepts, assumptions, and perceptions. It also means letting go of assumptions."

Common methods of ethnographic research include unstructured or semi-structured interviews with people about their activities, observations of interactions and the environment, video/audio recordings, descriptions of events, and finally moving from descriptions to explanations. Interpretation of data means looking for deeper reasons and connections among events, looking for linkages and connections that point towards patterns and practices and provide insights and deeper understanding. In this project, too, participants will adopt an ethnographic perspective — they may call on some of the anthropological insights and traditions noted above but they also take the method forward in their own way.

Women write their names on a wall in a *basti* in Rajasthan, India

Making Meaning

The ethnographer must develop a theory of meaning for whatever/whoever is being studied and understand the game internally by asking, "What does it mean to them?" Not by interpreting or judging from a perspective of science and rational thought. For example, a person from a different culture visiting a village in India might ask, "Why has that woman written her name on the wall?" or "Why did that woman write on the outer wall of a house, 'Mothers-in-law and daughters-in-law must learn together'?" But rather than focussing on the content of what was written, an ethnographer would look at the literacy act and the social practice of writing on a wall, which is supported and accepted in an Indian context but is not in a Western context.

ISSUES AROUND DOING ETHNOGRAPHY

Validity of Ethnographic Research

Questions are sometimes raised about the validity of ethnographic research compared to more traditional, experimental or survey-based, empirical approaches. It is important to remember that these are two distinct approaches with different aims. In ethnography, case studies are used to demonstrate a concept or a hypothesis. Case studies used in this way are not meant for empirical generalisations. We thus only need one case study to demonstrate a concept, not necessarily 'representative' data or samples.

> "Ethnography offers a way to look more closely and explain things such as low motivation, 'failure' of programmes, etc."

Experimental methods and ethnography are inversely related. More experiment means less ethnography and less interaction with people, while more ethnography means less experimental data and more interaction with people. In ethnography, the close relationships developed with our 'subjects' are part of what makes it possible for us to make the claims we make. This is in contrast to empirically-based approaches which aim to reduce the level of interaction that may be perceived to 'colour' the data. It is also important to acknowledge the differences and perceived 'weaknesses' of ethnography.

Recognising the 'Frame'

In ethnography there are always 'lenses'

As mentioned above, in ethnography there are always 'lenses'. Ethnography is always rooted in some kind of theory or the researcher's frame of reference.

With regard to adult literacy and ethnography we must be aware of the frame through which we are seeing the class or activity. As a teacher? Researcher? Donor? Programme manager? Learner? These create lenses of perception. Take this example. During a discussion about festivals in a literacy class, the women became very animated, opinionated and involved in the discourse. They had great strength in verbal skills and dialogues, even if their literacy was weak. The teacher allowed the discussion to flow. The lesson plan and the goal of the literacy class remained unfulfilled. An ethnographer-researcher observing the class would possibly comment that the discourse itself became the vehicle and focus. And the implication for curriculum and teaching-learning processes would be to make a link between discourses and technical literacy skills. A supervisor, on the other hand, may not be pleased that the lesson plan has not been adhered to. The values, beliefs and sentiments of the observed and observer should, however, be included in the research report.

Local and Global

There are trade-offs between taking an ethnographic approach versus an experimental one, such as regarding local/global issues, since ethnography is somewhat 'micro' in its orientation. Ethnography may not always be able to take external political pressures into account, and yet with development programmes there is a need to link with macro-economic and policy issues. The ethnographer thus has a responsibility to work towards making local and global linkages by doing research 'upwards' — by finding out about the larger policy issues and international frameworks and analysing them in the context of power, desired outcomes and relations with policy agencies — and then making connections between the 'global' and the 'local' whenever possible. The ethnographic practitioner holds a unique local perspective that could be shared with those at the 'global' or macro, policy-making level.

> "Ethnography can link the local with the global. Policy-makers can also be trained to look at new ways of assessment and to use other inputs rather than just statistics to determine policy."

Can Ethnographers Intervene?

> "As practitioners and activists we will invariably be interested in change. As ethnographers we will be trying to understand the status quo. The role of an interventionist-ethnographer will always be a fraught one."

Another vital issue, at least for practitioner-ethnographers (all the participants would come under this category), was whether they could be interventionists or whether they are always meant to be passive observers. This in turn gives rise to concerns about whether ethnography is compatible with a change-agenda or whether it leads to

conserving the status quo. The relationship between the researcher and the researched when using an ethnographic approach makes dealing with such issues almost inevitable. Recognising power relations and appreciating the voice of the subjects is the domain of the ethnographer. The ethnographer may often then be drawn into negotiating or mediating within power structures.

> "The ethnographer has two options: to 'get into the system' by being a participant while observing or by observing objectively, trying not to interfere. The latter is now out of date."

CHAPTER II

Literacy and Numeracy as Social Practices

Literacy has been, and often still is, perceived as an autonomous set of skills, but is gradually being seen as a social practice that can be explored through the observation and analysis of literacy events and practices situated in context. Several sessions of the workshop were devoted to developing an understanding of literacy and numeracy from a social-practice approach. Chapter II, which is divided into three parts, captures the main points of the content and discussions of these sessions.

DEVELOPMENT OF A SOCIAL PRACTICE MODEL OF LITERACY

Perceiving Literacy and Illiteracy

Workshop facilitator Brian Street used his research experience in Iran as the vehicle for exploring the evolution of perceptions around literacy. In the villages where Street conducted ethnographic fieldwork in Iran in the 1970s, he had observed various instances and spaces where literacy was being used continuously — such as in the primary school, around the post-office box, fruit sellers labelling boxes, people taking notes and writing records, classes taking place in the Madrassa (Muslim religious school), and so on. From this research he identified three 'sets' of literacy based on specific contexts in this village: 'Dabestan literacy' at the village primary school; 'Madrassa or Maktab literacy' among those who went to religious school; and 'commercial literacy' among those who sold fruit at the city market and had to write receipts, bills or cheques.

> "Despite such obvious uses of literacy, the villagers were labelled and perceived as being 'illiterate' by outsiders because they did not perform in the realm of defined literacy. There was a sharp contrast between perception and actual practice. This happens all the time even today."

How can one make sense of a situation like this, where people described as illiterate demonstrate so many literacy practices in their social context? The dominant theory at the time was that there was a great divide between the 'oral' world and the 'literate' world. The 'literate' world was seen as being logical, rational and efficient and the 'oral' world as irrational, ignorant and unscientific. But this model did not fit with the reality seen and experienced in this village in Iran. New terms were needed to describe the situation, in order to see the things that the 'dominant model' seemed not to see.

The Autonomous Model

An analysis of this situation revealed that there was an 'autonomous' model of literacy held by various international agencies, development organisations, governments, etc. These agencies held the view that irrespective of context, gaining literacy skills will have a certain effect on people and communities — in that sense, the model assumed literacy to be autonomous, to have effects on its own irrespective of variations in use and meanings across cultures. These autonomous effects were thought to include: enhanced cognitive skills, uses of logic and scientific thought and ability to engage in rational economic decision-making. These assumptions drove policy and funding decisions. If, after a literacy programme, a community did not show the expected results of becoming part of the 'literate world', the problem was seen as lying with the people involved. It was not seen as a problem of the programme or the theory. There was no local accountability within the programme design, and no taking into account local variations, local meanings or local knowledge.

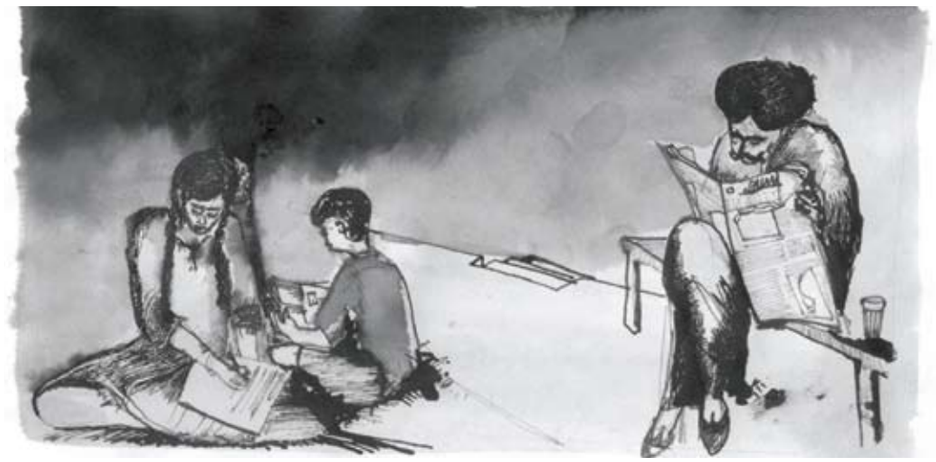
> "This autonomous model that seems to be neutral is in fact not neutral at all — it is loaded with hidden ideologies and assumptions regarding culture, progress, 'correct' skills and worlds of knowledge. These attitudes and beliefs are imposed on local people as though they were universal."

The autonomous model did not, however, match reality. Descriptions, especially by ethnographers but also by teachers in adult-literacy organisations, began to show that local people and students in adult-literacy classes had their own funds of knowledge and were able to use literacy but in different ways than those assumed by the outsiders. So how do we operationalise a new model or description of observations when a model does not match reality?

This dilemma led to the development of a social-practice model of literacy. According to this model, literacy varies with social context; there are different uses and meanings associated with the activities of reading and writing, rather than one universal literacy. How could we describe and explain these local literacies? Researchers coined the terms 'literacy events' and 'literacy practices' in order to provide fuller and more culturally sensitive accounts of literacy in people's lives.

Operationalising Concepts

Literacy events are identified as any kind of interaction that people have with literacy activities or resources. Literacy events can include acts such as writing letters, reading newspapers, writing public messages on walls or labelling boxes. Seeing situations as literacy events, instead of focussing solely on autonomous literacy skills, dramatically broadens and humanises the perception of literacy.



But it was not adequate to simply keep describing such events wherever they were observed — it was also necessary to recognise the patterns in these events and to attend to the underlying meanings that local people brought to the events. One can observe and generate a very long list of seemingly random, unrelated or repetitive literacy events. So once we begin identifying literacy events, how do we identify the patterns of literacy events and determine their underlying connections and meanings?

This question led to the coining of the term literacy practices. Identifying literacy practices involves exploring literacy events and their linkages within society more deeply by communicating with people, interviewing, questioning and understanding the deeper meanings of what's happening. Literacy practices may be those more general uses and meanings that enable us to see patterns and similarities across different events — we may note religious literacy practices across a range of events that include reading holy texts or hymns, and perhaps also writing in such religious contexts, as with transcribing sacred texts or writing out one's own prayers.

These religious literacy practices will differ from, say, commercial literacy practices, although there may be some overlap in a given event and it may take an ethnographer some time to disentangle religious literacy practices from commercial literacy practices

in particular contexts. But if we do not disentangle them we may fail to understand what they mean to the participants — to an outsider, many literacy events may look the same but they may have a quite different significance and meaning to practitioners. It is this kind of understanding that literacy trainers and teachers are trying to achieve as they follow their students into everyday situations and come to recognise that ideas about literacy are not exclusively the right of teachers.

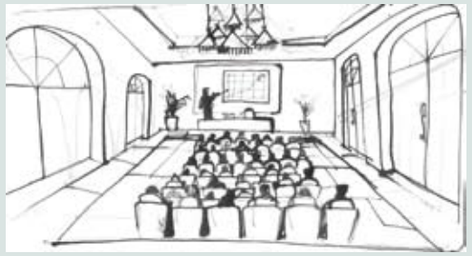
> "Literacy practices, then, are when people involved in a literacy event share certain understandings and the events share certain meanings. Practices are combinations of actions and meanings, shared in a society or an institution. Literacy events are then no longer isolated. They become social and institutional."

Identifying Literacy Events and Practices

In order to become skilled in this process of identifying literacy events and practices, one can start by making simple observations in a certain environment. Start by looking for events that appear to have sufficient literacy involved to make it worth observing for longer. After time, one can begin to look at patterns and understand what practices these events are part of, link them to other events and make hypotheses about the links between events.

An example of observing literacy events and consequent hypothesising about the literacy practice

Imagine you observe a literacy event: There is a conference taking place in a big hotel. Papers, books, handouts and notebooks are scattered all over the table. There is an overhead projector with slides.



You make a hypothesis: The literacy events observed are part of academic literacy practices (such as a conference of professors presenting papers). But later, you discover that the meeting was, in fact, about how to set up a McDonald's franchise. This has a completely different meaning and set of practices related to the literacy events observed, even though the literacy events may themselves look the same. In this case, these would have been described as commercial or corporate literacy practices rather than academic literary practices.

Literacy practices usually revolve around such common occurrences and needs. Some other examples of literacy practices are record-keeping practices, formal school literacy practices, journal-keeping practices, public communication practices (newspapers, magazines, signs and signboards), private communication (letters, notes, codes), and there are many others. Within all of these practices there may be literacy events that look the same, such as writing on pieces of paper, or reading information from a book or paper or sign. But it is easily seen that each of those events happen in a specific context relative to the particular practice. Literacy is not just about the act itself, it is the context of the act that gives meaning to its practitioner.

> "Writing a note to a friend is not the same practice as writing down a list of gifts received at a wedding, even though both utilise a pen, paper, the alphabet and words, and on a decontextualised level both acts look identical. But the meanings behind the acts are entirely different. Thus literacy is seen as a contextual set of social practices, instead of an autonomous set of decontextualised skills."

It is this awareness of literacy as social practice that should accompany the researcher as well as the teacher of numeracy and literacy when conducting an ethnographic research case study in a particular environment or context.

DEVELOPMENT OF A SOCIAL-PRACTICE MODEL OF NUMERACY

The Autonomous Model and Perceptions of Numeracy

Numeracy, within the field of adult literacy, is an overlooked area. It usually takes a backseat to literacy, in the same way that language studies are nearly always preferred over maths in formal schools. The perception of numeracy is fraught with maths trauma and gender, class and ethnicity issues, with maths seen as being difficult, boring and often irrelevant. And adult numeracy is rarely seen as a priority, or is often merely addressed in the same way that children learn maths.

Parallel to literacy, an autonomous model is at work here. Maths is most often presented as a set of decontextualised skills — numbers, counting, fractions, memorisation of multiplication tables, addition and subtraction, steps in solving calculations, etc. Generally only one method of problem-solving is taught, and only that method is accepted as 'correct'. The correctness of the final answer is what is important, not the process and not the reasoning. Numeracy is often seen from a very narrow perspective of being almost exclusively numbers and calculations using the four operations — addition, subtraction, multiplication and division. And numeracy is perceived to be neutral and removed from social values or social interactions, because numbers do not have 'meaning' or implications in the same way that words and language do.

Numeracy in Context

A question: 10 birds are in a tree; 2 are shot. How many are left?

When this question was asked of the workshop participants, a range of answers arose — and there was no single correct answer, because all answers could be justified.

Some answers often given are:

0 birds are left (2 fall to the ground, the other 8 are scared and fly away, so none are left in the tree.)

2 birds are left (2 fall to the ground, the other 8 fly away)

10 birds are left (8 are alive and 2 are dead, but all are still there)

8 birds are left (8 are left alive, and 2 are left dead)

Each response could be linked to a particular perspective. For example, a birdwatcher might answer 0 birds, since no birds remain to be watched. A conservationist might say 8 birds, being more interested in live birds. And a hunter would probably answer 2 birds, because s/he would be most interested in the two that were shot. The answer evidently depends on one's values, social position, outlook and interpretation — even though at first it seems to be merely a simple mathematical question of subtraction! A seemingly straightforward maths question can reveal hidden layers of inherent values.

> "The symbolism and built-in meanings in maths are quite rich and complex and we often take much of it for granted and don't realise how HARD it is. How much is intuitive? How well do we really understand what we're doing/teaching/learning?"

Numeracy is a Social Practice, Too!

The reason for the variety of answers and interpretations given is because the question can be seen in many possible contexts. It is not the maths that is being interpreted in varying ways, it is the context. This suggests that maths cannot be seen as separate from the context in which it is sited. It always lies within a context. It is only in formal education that maths is claimed to be decontextualised, where we would have to answer 10-2 = ? with no explicit context given. In every other situation in which maths is used, it is found in a particular context with a particular purpose, whether it is a market or a bank or a tailor's shop or the formal educational context of formal maths. And thus numeracy begins to reveal itself as a potently contextualised social practice.

In addition, it very quickly becomes evident that numeracy is power-laden. Those with the particular numeracy skills from formal education are often in control of vital aspects of life such as banks, moneylending, shopkeeping, etc. It is as though mathematics were a gatekeeper to such positions. People with weaker formal maths skills can end up feeling that they are the victims of cheating, whether by being cheated of change given, incorrectly weighed goods, or inaccurate wages. This is where social justice issues of numeracy become evident, and where the value of taking an ethnographic approach becomes clear as well.

> "Maths, too, is not neutral or value-free, and in fact encompasses vast and often hidden realms of social value and social justice. And thus numeracy, usually perceived only as an autonomous set of skills, can be seen instead as a vital and yet veiled social practice. The nature of ethnographic research makes it an excellent way to discover social numeracy practices."

Street-vendors' Practices

During the first workshop, participants saw a video revealing the maths practices of children working on the streets of Rio de Janeiro. The video showed that the teenagers, who had very little formal schooling, were able to do swift, accurate calculations of sales, performing addition, subtraction and multiplication very quickly and with large (four-digit) numbers, as well as easily converting between old and new currencies. However, these children were not able to perform the same calculations on paper, and some had difficulties even writing the numbers properly.

Before watching the video, participants were asked to watch for different kinds of maths in different contexts, to compare street maths and school maths, to be aware of maths as a social practice and to consider the question: 'What is the importance of context?'

Comments from the participants:

> "In a traditional maths class, the learning is context-free. They do calculations outside of meaning, on paper. On the street, the calculation has meaning."

> "These street children have power and success in their world on the streets due to their numeracy skills, but these same children in school would be seen as failures. This illustrates the role that maths can play in the areas of social justice and values."

> "The children's methods of decomposing large numbers in order to add, subtract, multiply etc are simpler and quicker that what is taught in schools. There is evidence that those who can do maths well in schools can't do it on the streets. We blame the children, but why not the kind of maths being taught in school?"

Operationalisating Concepts

In shifting literacy from an autonomous model to a social-practice model, we began looking at literacy events and the meanings that link them to create literacy practices. Numeracy as a social practice can be approached in the same way. Through observation, numeracy events can be identified — counting money, making tally marks on a wall, marking days off on a calendar, measuring the size of a vegetable garden, keeping track of expenses, playing games, solving problems, etc. These events connect in ways that create numeracy practices such as commercial numeracy practices — moneylending practices, religious calendar practices, measurement practices of cooking, tailoring, agriculture, construction, etc. Formal maths education is one more practice.

In seeking numeracy events and practices, it is helpful also to consider aspects of numeracy that go beyond numbers. Aspects such as shapes, patterns, space, time, problem-solving, measurement of a variety of attributes, and managing information, are very significant areas of numeracy that should not be neglected. For example, tailoring and building are very numeracy-rich activities because of the spatial reasoning required. Cooking involves estimations of quantities and time, which are vital mathematical skills, even as unconsciously as they are practised in cooking. Information about dates and amounts is often recorded in tables, graphs and matrices.

Analysing Numeracy as a Social Practice

Having established that numeracy is an embedded social practice, numeracy events and practices can be analysed in terms of the following components:

Content Identifying the maths concepts, skills and procedures involved in the practice.

Context Assessing the purposes and site of the practice and the context in which the maths is being used and the mode used (written, oral, etc).

Value Identifying the beliefs, values and importance attached to the maths in that context.

Social relations Assessing power and social relationships with others that are affected in the maths practice, and the social position of being inside or outside the 'world of maths' ('inside' meaning those who have received formal maths education and see themselves as insiders to that discipline).

Participants used these four aspects to analyse and compare the characteristics of formal school practices with the numeracy practices of a street vendor:

ASPECTS OF NUMERACY	FORMAL SCHOOL PRACTICE	STREET-VENDOR PRACTICE
CONTENT	Traditional concepts such as addition, subtraction, fractions, multiplication, etc.	Addition (totalling, complementary addition), subtraction (giving change)
CONTEXT	Abstract, not purposeful, an educational context, mainly working in written mode	Selling for livelihood, life actions, commercial context, working in mental and oral modes
VALUE	Getting the right answer, complying with formal system demands	Making sales, succeeding, making profits and a living, surviving, being alert and sharp
SOCIAL RELATIONS	Teacher is in charge, learner has little power	Seller has power, and so do customers; negotiating with customers

"Using the tools of ethnography and the modes of analysis for numeracy events and practices can reveal a great deal about the inner workings of numeracy practices in a particular context, and the social-justice issues that numeracy practices impact upon."

Using Ethnography to Move to a Social-Practice Approach

Participants were also introduced to an analytic technique called DICR, which enables one to build on people's existing knowledge and move to teaching something new. The participants were asked to analyse aspects of the Brazilian street-children video using this technique.

A suggested model that can be used for analysis

Describe, Inform, Confront, Reconstruct (from Smyth, 1991)

Describe What is going on? This is for the students to give an 'account of' what they know of the topic, about their learning of it and why they are in this class.

Inform How do they understand this description? This is for the students to 'account for' this description and give their understandings of it.

Confront Why do they think this knowledge is important in this situation? The students confront the knowledge and the situation. Why is this being taught? Is it necessary for…Life? Qualifications?

Reconstruct How shall we go about reconstructing their knowledge? This is usually the actual stage of 'teaching'.

Using the Model

Going back to the example of the street vendors in Brazil, the boys can calculate 1000 minus 850 quickly in their heads, but can't write it. How can we help them shift to being able to write it?

We could start by acknowledging what he does (Describe) when he calculates: 1000 minus 850 = ?; and then how he does it (Inform); then we would invite him to go further (Confront) by understanding what the bottlenecks are and why he needs to learn the new skill; and then we would help him learn a new (written) system (Reconstruct).

The presentation of the model enabled participants to reflect on their current methods of teaching-learning and material development. Participants acknowledged that programmes usually end up teaching what they want and jump to the material design (Reconstruct) stage without informing themselves or having substantive discussions with the participants.

> "Too often we're trying to teach people things WE think are important, and don't give them enough chance to make those decisions themselves. Going through the D, I and C integrates people into the process of their own learning before jumping to the R stage. It isn't that we're replacing teaching, but there are steps before teaching."

OBSERVING LITERACY AND NUMERACY EVENTS

The best way to become accustomed to seeing literacy and numeracy as social practice as opposed to sets of autonomous skills is to observe literacy and numeracy events. To this end, the participants of the first workshop were asked to spend one evening in Delhi observing, looking for examples of literacy and numeracy. The next day, after hearing each other's reports, the group began to develop a deeper feel for literacy and numeracy as social practice, and to become sensitive to examples of literacy and numeracy in the environment around them and the embedded issues of social justice and power. Some of their observations and ethnographic methods follow.

Examples of Literacy and Numeracy Events

Interview with a roadside shopkeeper:

Every day I see this roadside shop that sells jackets. Today I stopped to talk to the shopkeeper. "Where do you get the jackets from?" "From Panipat [90 km from Delhi]." "Are they second-hand jackets?" I asked. He said, "No! These are export factory rejects." When I started asking him about rates and how he procured the stock, he looked worried. He asked me, "Are you from the Press?" Then I realised I should have told him why I was asking him all these questions. He relaxed after I told him. I began making social connections, like talking about places we had in common, so that I could get correct information.

He said they buy in bulk. "Bulk, but how much? So you count each piece or do you have your own system?" I asked. He said, "1 truck is called one *katta*. One *katta* has 10 *ganth*. 1 *ganth* has 100 kg and 1 kg is equal to 1 or 2 jackets. So in each *ganth* there are 150, 155 or 160 jackets. So we weigh it and don't count. It means that one *katta* has 1,650 jackets."

I asked, "How do you remember all this?" He replied, "It's all in my mind. We don't use bills or any written documents, or else we would have to pay taxes! If we want to communicate with each other, we use sign language, so that others can't read it!"

Understanding car number plates

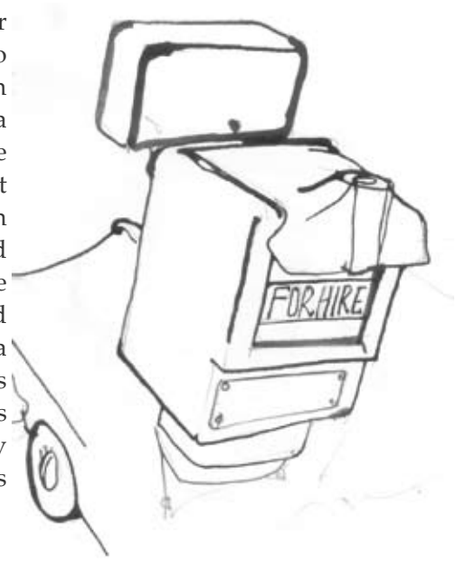
Every day I see car licence plates. I only knew that 'DL' means Delhi. Yesterday I was curious to know the meaning of the numbers of a plate like (DL1CA4567). I asked my husband: "What does the 1 in the number DL1CA4567 stand for?" He said that Delhi is divided into nine zones and so this car is registered in Zone 1. 'C' stands for the kind of vehicle, so this is a car. A4567 is the serial number of the car that stands for the date the car was registered.

Observing street hoardings, signboards and billboards

While I was walking, I sae huge billboards in written and visual modes, carrying public-interest messages. Some of them were on tuberculosis (TB) and how it is a common medical problem and when people need to visit a doctor for a TB check-up. There were some billboards on immunisation for polio. But I feel that the visuals were not self-explanatory at all. People with low levels of school literacy would find these billboards very difficult to read and decipher. Most of these billboards were on streets where there are many government offices. So the question that came to my mind is, who are these messages actually for? Why aren't these billboards put in marketplaces, which are visited by all classes of people?

Interview with a taxi driver

I talked with a taxi driver and his brother about their work. He said they spend anywhere from Rs 100 to Rs 200 per day on fuel. Their CNG taxi can go 13 km on 1 kg of fuel. Fuel costs Rs 18 per kg, resulting in a cost of about Rs 1.5/km [my calculation]. Their metre rate is Rs 8/km, giving a substantial profit margin at first glance. But they have many other expenses such as insurance, bank loans, inspections, etc. He told me all of his income and expenses from his head; he did not refer to any kind of record-keeping. He said that foreigners usually round their fare up and give a tip. But Indians only pay the fare on the metre. This distinction between domestic and foreign passengers has great implications in social relations. He said they prefer foreign passengers and also said that few Indians take private taxis anyway, due to the cost.



Common Themes Emerging from the Discussions

Varieties of literacy/numeracy and modes of communication

Participants were surprised at the vast range of literacies observed, from types and styles of texts to various numerical processes to hybrid messages made of letters, numbers, pictures and abbreviations. This also then pointed to the varying levels of skills required to be able to understand the various forms of communication.

> "Some of these are hybrid messages, mixed symbols. In education we always keep the symbols and systems separate. But in text messages and email this happens frequently now."

Social Factors

Through the collection of observations, the social aspects of literacy/numeracy, such as power and justice, became starkly clear. Politics was involved in the placement of billboards, second-language proficiency determined comprehension of certain types of information, and social status determined expected levels of income.

> "I thought if an illiterate person walks into a place like McDonald's, the person might really be quite lost. The pace is fast, all the ordering depends on literacy and numeracy and there are hardly any opportunities for 'personal interactions' with the waiters. But then maybe McDonald's does not want a non-literate clientele."

Accessibility

Access to information was not affected merely by the skill of being able to read, write and calculate. Access was also limited by language, by location, by writing style and level, and also by politics. Accessibility was also facilitated by a variety of communication skills.

> "The shop vendor was calculating different types of discounts in his mind and offering them to potential buyers. He was also matching *kurtas* with *salwars*. He was using numeracy skills (calculation) but he was effective because he had good communication and negotiation skills."

Implications for literacy and numeracy teaching and learning

Drawing on their experiences, participants were able to concretely identify strategies that they could incorporate in their work:

- Using a range of communication strategies instead of relying heavily on standard text alone, such as hybrid messages using texts and symbols, using textual literacy within an oral discourse.

- Connecting literacy and numeracy texts with experiences to create more meaningful teaching-learning spaces. This could involve enabling learners to engage with the literacy they see in their environment.
- Keeping in mind what people can do, instead of focussing on teaching them what they can't do.
- Bringing this kind of experience of observing and discussing literacy and numeracy events into the classroom and curriculum.

"We need to think about how we could move from the knowledge of local practices to the educational practices of adult literacy and numeracy. What is the link between what people do in 'the world' and what they will be doing in an educational context?"

CHAPTER III

Planning and Conducting Ethnographic Research

After critical concepts of ethnography, literacy and numeracy had been explored, participants from different organisations then used these concepts to plan small research projects that they would undertake once they returned to their workplaces. A research design framework was presented by the facilitators and discussed by the participants. Each organisation developed an initial research plan that would address a question or problem pertinent to their respective programmes. They then presented their research plan and received feedback from the group. They used this to revise and refine their plans. Chapter III describes this process.

SUGGESTED RESEARCH FRAMEWORK

Ethnographic Research Design Framework

'Problem': What concerns/'problems'/constraints do I see in the work context that an ethnographic approach might help me explain and deal with better?
What is the foreground and background of the problem? Why is this a problem for my context? What are some possible alternative explanations? How do the global and local interrelate? Where do global and local contexts meet/interface?

Question: How can I test my new 'lenses' (an ethnographic perspective) with respect to my own work situation?
Develop a question that enables me to explore the 'problem', being careful not to be too broad, too ambitious. Keep the question answerable and problematise the meanings of key concepts such as 'literacy', 'empowerment', etc.

Concrete focus What data should I collect in context: what, where, when, who, how?

Methods Which method(s) is(are) best for answering the question? Possible methods: observation, visual representation, focus-group discussions,

interviews (formal and informal), use previous research/knowledge, checklists, triangulation. A particular method is not demanded or required, and should also not be chosen according to one's 'favourite' method.

Data Is there enough data to address the question and to be able to report and analyse? This is a recursive process: upon analysing some data, we may find that we need to get more data because other questions arise. Or if we collect too much data, we find we need to cut it down, narrow down the questions and scenarios.

Analysis What kinds of explanation for the 'problem' does this provide? What hasn't been 'seen' before that this approach provides lenses for? We may begin to question initial assumptions.

Applications What are the implications of this for teaching and learning in my programme? This should be kept in mind throughout the whole mini-research process, and keep the focus on the applicability in terms of the literacy/numeracy context.

Validity How can I justify my claims in light of the kind of data I have collected and how I arrived at the conclusions? How robust are my claims and results? Would they stand up to scrutiny? Has the data been crosschecked?

Report How will I track the processes of doing this research project? The research process itself should be documented and included in the final report. And thought should be given to presentation to specific audiences such as fellow practitioners, others in the organisation, and funders.

RESEARCH DESIGN PROCESS

The process of designing the research was done in two stages.

Stage 1: Initial ideas — brainstorming about research projects

Each organisation present was asked to briefly describe their project and a problem or issue they would like to address by conducting a small research project. They received feedback from the group, which they used in further developing their research plan.

Stage 2: Revised plans — presenting revisions of the research design

Each organisation took on board the suggestion, revised their research designs and then made a brief but more formal presentation to the group about their proposed project addressing all aspects of the research design format.
The example given below illustrates how a process of discussion enables one to modify, sharpen and make manageable one's research questions and design. The research designs changed considerably between the first and second stages.

ILLUSTRATIVE EXAMPLE:
Mahila Samakhya, Andhra Pradesh

Stage 1: The initial research plan

The research context A women's empowerment project, Mahila Samakhya views education as a process of problem-solving and reflection. In the beginning, when we talked about literacy, women would bring up the issue of wages. They wanted to know the legal minimum wages and how they could actually get that (as the wages they received were far below the stipulated minimum wages). In our project area, liquor is also given as part of the wages — Rs 15 as cash and Rs 5 worth of liquor. We have developed the curriculum based on these discussions, choosing particular problems and related words. Our programme primarily focuses on literacy, and numeracy has taken a backseat.

Problem In our programme we have subsumed numeracy within literacy. But after this workshop, we understand that we should see literacy and numeracy in different ways. We therefore feel that we should study local numeracy practices in greater depth. The questions we have in mind are:

- How can we understand local numeracy practices?
- What are the implications of incorporating an ethnographic approach in our educational programme?

Feedback and discussion It was pointed out that the questions needed to be broken down and further sharpened. For instance, it needs to be identified which numeracy practices will be studied. More details are required in terms of where the study will be done, with which community, how many villages, etc. The second question would be valid only after some curricular changes had been introduced.

Based on the comments received, the Mahila Samakhya team narrowed the scope of their research and also sharpened the research questions.

Stage 2: The reworked research plan

'Documenting Local Numeracy Practices in Telengana, Andhra Pradesh'

Problem to be addressed by the research The methods we are currently using to teach numeracy do not address the learning needs of the learners in our project area.

Questions What are the local numeracy practices related to differend caste-based occupations? How do local numeracy practices affect the teaching-learning process?

Methods Observation and interviews

Data Recording of numeracy practices, such as measurements, money, etc, used in the daily lives of the community. The study will be conducted in two villages where Adult Learning Centres are running. Of these, one will be a tribal village.

Feedback and discussion The feedback that the research team received was that the questions and methods needed more clarity. The question: How will including local numeracy practices in the teaching-learning process affect the learning of the learners? In terms of research design this may involve a pre- and post-evaluation. One option could be to observe local numeracy practices and then observe the classroom. This could help determine to what extent the local practices are being used in the teaching-learning, or whether they are used at all. The process before and after could also be digitally recorded. Some more specifics are needed like whom will you be interviewing, studying, etc. Which numeracy practices — calculating, measuring etc — remains to be specified.

CONDUCTING AND PRESENTING THE RESEARCH

A similar process was followed for each organisation. All the participants left the first workshop in January 2006 with research plans in hand. Over the next eight months until the second workshop, the participants worked with their organisations to find the time and resources to conduct their research while also meeting their other organisational responsibilities. The research designs were to be the starting point for the organisations to plan and conduct their research. However, in most cases the organisations did not, in fact, follow their original research questions. After discussions within their organisations and as the work developed, participants changed their research plans. During this process participants also got feedback from the workshop facilitators on further refining their research questions and methods.

Eight months later, most of the participants and organisations were able to reconvene for the second phase of the workshop. Many participants were very excited about their research studies but, at the same time, expressing concern that they hadn't 'done it correctly', or that their research data did not display anything significant. Participants were worried about the fact that their written reports did not reflect the richness of the experience.

"We had to change our research design several times as the political situation in Nepal was very volatile and was not conducive for us to travel. Each time we thought this was the final outline, we would have to change it again."

World Education, Nepal

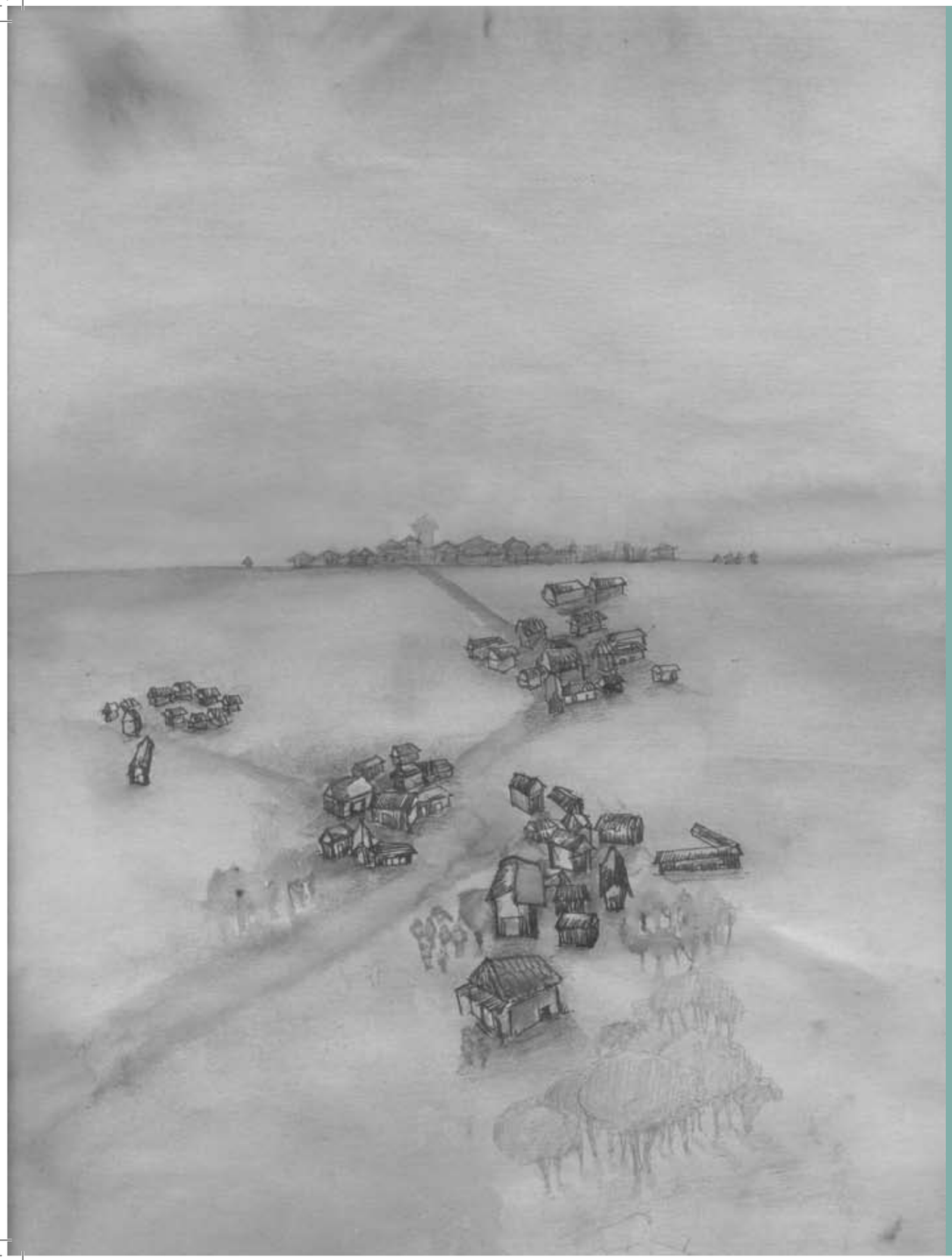
"I initially had six questions but soon realised that that was too many. I then narrowed it down to two questions. But that was a difficult process."

BGVS, Rajasthan.

"The notes and writing-up, organising the research data and results, was quite difficult, there were many nuances. The first visit was more descriptive; the second trip had more details. But we did wonder if we had moved too quickly into the structured interviews."

Nirantar

The first task at the workshop was for research teams to present their research and share their analyses. Despite participants' initial concerns and uncertainties, the presentations revealed the depths of insight that can come from even a small research project. Some participants admitted that at first they felt their research was nearly meaningless, but after discussions and seeing other presentations, they recognised the strength and usefulness of what they and others had discovered from the research. What appeared obvious and commonsensical to one group was often novel and full of insights for another. After each presentation, the large group gave feedback to the presenters about their research, and made suggestions for revising the final written report. The organisations were encouraged to return and revise their written reports based on this feedback. The following section presents the research reports generated by the organisations.



PART II

Research Project Reports

After the first workshop, participants returned home and, in consultation with their organisations, reworked their research designs. They then set about conducting the research and writing up their research reports, which they presented at the second workshop. In Part II, you will get to read reports of six research studies that were submitted. The studies, rich in detail, document a number of interesting local literacy and numeracy practices. They also examine the larger contexts and power relations within which these practices are embedded. The studies threw up several questions, which were debated and discussed at the workshop. A brief description of some of these are described in the concluding section.

MAPPING THE LITERACY ENVIRONMENT IN TWO VILLAGES IN UTTAR PRADESH

ORGANISATION
Nirantar
New Delhi, India

RESEARCH AND TEXT
Purnima Gupta, Juhi Srivastava, Shalini Joshi (Nirantar, Delhi)
Chunni, Rama Parihar, Gyasi Bai (Nirantar, Lalitpur)

INPUTS
Malini Ghose

This study by Nirantar tries to map the literacy environment in two villages in Lalitpur district of Uttar Pradesh, India. Nirantar members from Delhi and local facilitators were involved in the study. Walks through the villages, visual documentation and then individual interviews were employed to ascertain the different types of 'texts' available in the villages — both in the external environment (public spaces like walls, buildings, shops), and within Dalit homes. Further, the contexts of these texts — who reads and writes them, and what relations of power they reiterate — are explored.

INTRODUCING THE STUDY

Nirantar, a resource centre for gender and education, located in New Delhi, initiated a community-based literacy, education and empowerment programme for women and adolescent girls, in 20 villages in Lalitpur district (one of the 200 poorest districts in India) in the North Indian state of Uttar Pradesh (UP) in 2002. The programme is called Sahjani Shiksha Kendra (which roughly translates as 'Women's Education Centre'). The programme works with nearly 500 women and girls through different activities such as village-level literacy camps and discussion sessions, residential literacy camps, village-level centres and production of local material. The programme focuses on the Dalit community, which is invariably the most economically and socially deprived community in the Indian rural context. The literacy and educational process is holistic, rooted in the lived realities of the women participants, and enables them to develop analytic and leadership skills. The local team comprises 15 facilitators who are from the area and two local coordinators, most of whom have limited years of formal schooling.

Research Questions

Through this research study we wanted to map the literacy environment in two villages with a view to exploring how the findings of the research can feed into developing literacy material locally. As the topic was fairly broad, after considerable discussion we

narrowed the scope of the study and formulated the following research questions:

- What written 'literacy texts' are available in the external environment of two villages in UP? In what larger contexts are these texts embedded? Who reads them? Who writes them? What value is associated with them? We use the term 'texts' very broadly to include written material of different kinds. The external environment refers to public spaces like walls, buildings, shops, etc.
- What texts are available within Dalit homes? In what larger contexts are these texts embedded? Who reads them? Who writes them? What value is associated with them?

Research Methods and Process

The study was conducted in two villages, Gauna and Korwas, where Nirantar runs education centres.

The research methods we employed for this study were a village walk and individual interviews. The village walk covered both the Dalit and upper-caste *bastis* (neighbourhoods). On the village walk we spoke to various people about the texts and later also made enquiries about specific texts. For the home environment we focussed on the Dalit community and identified texts found in three households in each village.

We decided to make this process both a research and collaborative learning process and thus included some of our local facilitators in the research. As they had not participated in the training, Nirantar members conducted a short orientation for them. Two teams, one for each village, comprising a member of Nirantar (Delhi), the facilitator of that centre and one local coordinator, did the initial fieldwork. Before beginning the fieldwork the teams met and discussed the objectives of the study and methodologies that they would adopt. A broad checklist of texts and documents to look out for was also drawn up to serve as a guide. However, we did worry about whether we had intervened too much as a result of using the checklist. Team members took detailed field notes, which were processed collectively in workshop mode. After this first round different members went back to the villages to gather further information where gaps were perceived. All the material was finally sifted and analysed at a workshop.

> "When interviewing, we used a checklist of ideas for written materials. Though we tried to use it as little as possible, we probably ended up prompting people with questions such as, 'Do you have a calendar in your house? Do you have a marriage record book?' It was hard for people to generate their own list of things. But was this the right way to do things? We felt we got a lot more information this way, and we did not have much time, but are not sure if that was too much intervention."

The Study Setting

Both the study villages, Gauna and Korwas, are large villages. Gauna has a population of 1,400 of many different castes. By way of facilities, it has a Primary Health Centre, two schools (primary and middle), a public telephone booth and several small grocery stores. The village has a *pucca* (tarred) road and good access to road transport. Both the upper-caste and Dalit *basti*s have electricity and the houses, even in the Dalit *basti*, are made of brick.

Korwas is a mixed-caste village with a population of 1,621, but is not as well endowed as Gauna. It has a primary school, a few small grocery shops (mainly in the upper-caste *bastis*) and a ration shop (a public grain-distribution shop). There is no *pucca* road to the village. The main road is 8 km away from the Dalit *basti* and 4 km from the upper-caste *basti*. Korwas is difficult to access in the rains. There is no regular public transport to the village. Only some houses in the upper-caste *bastis* have electricity.

The settlements of both villages are broadly divided into three sections on the basis of caste groupings — Dalits or 'lower castes', the 'middle castes' and the 'upper castes'. There is mobility between the middle- and upper-caste *bastis*, but not between the Dalits and other caste groups. Dalits rarely enter the other caste neighbourhoods unless they have to pass through or need to visit them for some specific purpose. It is equally rare for other castes to visit the Dalit *basti*. In both villages the Dalit *basti* is a little removed from the main village.

RESEARCH DATA AND ANALYSIS

Written Texts in the External Environment

During our walk through the village we found that several walls had writing on them and that the range of texts was quite vast — from government information and slogans, election signs, religious writing, good wishes, wedding announcements to even love messages. The writing style and language also varied considerably, as we shall see from the examples below.

Government Information

We found that a significant amount of the wall-writing concerned government information and messages. A lot of this information was in the form of slogans — messages on the importance of hygiene or the value of education. These slogans were generally written on walls which were located more centrally in the villages or on public buildings, like the walls of schools, public health centres etc. For example, the slogans on the school walls read '*Ghar Ghar Vidya ka Deep Jaalao*' (Light the lamp of knowledge in every home) and '*Padho, Padhao... Desh ko Aage Badhaao*' (Study, teach… Take the nation forward).

Another set of wall-writings communicated information about government schemes. For example, in the upper-caste *basti* in Korwas, there was a board carrying information on the construction of a small dam in the village. The information was factual, with details of coverage area of the dam, time frames for completion, etc. The information had clearly been written by a professional painter, was in very small type and had a lot of information crammed in. All of this had been put up as a mandatory requirement of the government to provide information regarding public schemes.

But who reads this information? When we were looking at the board there were a number of men from the upper-caste *basti*s sitting around and we started talking to them. They could all read the information but hadn't actually read it before (though they knew what it was about). We later found out that the men of the Dalit *basti* could not read the information as it required higher levels of literacy. But they too were aware of the content of the messages. Women, on the other hand, had neither read the information nor did they have any idea of what it said. The women we spoke to said their mobility was limited and restricted, they are mostly in purdah, and stopping to read a signboard would not be culturally acceptable. So even literate women would never stop to read a public sign.

> "All the government-related information was in formal language. One could surmise that the 'target audience' for such information and messages would be upper-caste men. It was clear that factors like education levels, exposure and mobility are very gendered, and that men have an upper hand in these."

Election Slogans

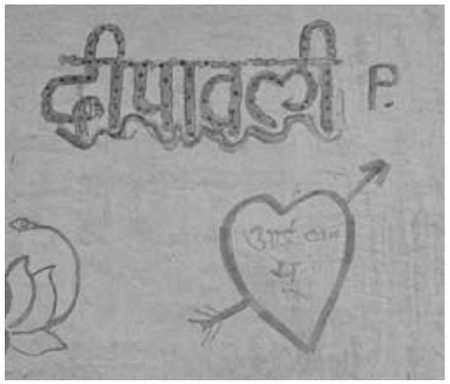
Election slogans and symbols visible on most of the walls in the villages had been written during the Panchayat elections that had been held earlier that year. These slogans utilised texts as well as symbols, stating the names of candidates along with their party symbols. The writing was large and very legible. In some places abbreviations had been used for names of political parties. Most of the women we spoke to did not understand the abbreviations even if they could read them. By and large, most women and men recognised the candidate and political party from the symbols. People also commented that they had read the messages at the time of the elections, and that they were now just decorative elements.

Clockwise from top left: A notice outside a health centre; the gates of a school; names on a wall written by a newly literate woman; information on a children's environment scheme and good luck messages outside a home; a Panchayat election symbol; a slogan on education

Wall-writing in the Dalit *basti*

We entered the village through the Dalit *basti*. There was so much written on the walls — none of it uniform or neat. We reached Siyarani's house in the Dalit *basti*. On the wall of her house there were interesting illustrations and texts. We asked her to read what was written. She read '*Shubh Laabh*' (good luck), '*Deepawali*' (festival of lights), '*Mor*' (peacock) and 'Kalicharan'. Kalicharan, we learnt, was her son's name and he had done all the writing. We also noticed a heart with an arrow with 'I Love You' written in Hindi. We asked Siyarani to read what was written inside the heart. She was able to read it but did not know what it meant. She said, "My son wrote something that makes no sense." The writing and the drawings had been made with blue paint and *geru* (red-coloured paint). The writing was neat but it did not look like the work of a professional artist. On the walls of Siyarani's kitchen, we found that she had written her name and the name of the village, 'Korwas'. We asked her if there was anything else that she had written. She told us that she writes her name and her husband's name on the sacks of wheat that are taken to the *mandi*. She also writes the names of various grains and vegetables on the sacks that come to her house.

Research Notes



This page: Wall writings on Siyarani's house. Right: a bank passbook and an envelope for a wedding invitation

Wall-writing on Houses

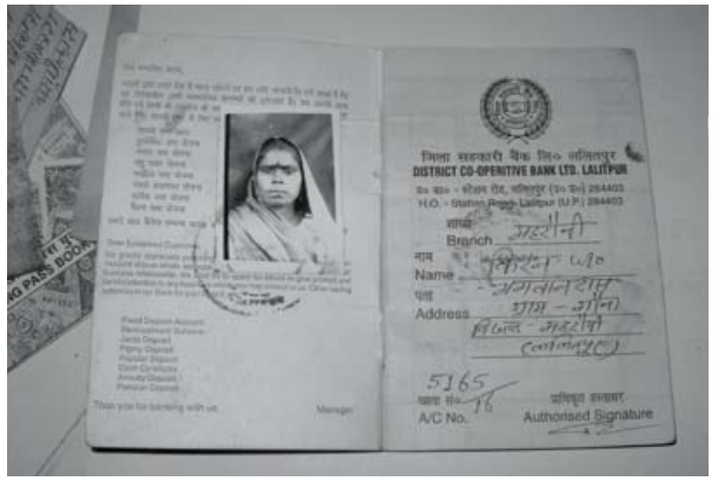
Walls of individual houses also had a number of things written on them. These included polio immunisation messages, religious texts, names of family members, names of newly-wed couples, poetry, some drawings like flowers, earthen lamps etc. Almost every house in the village had polio immunisation messages on their façades, near the front door. Everyone knew that the health worker had written it after giving the children in that house polio drops. No one, including us, could decipher what had been written, except the date. Clearly, this was not general information but code, and was valuable only to the health worker when she came around the next time. Most houses had religious symbols and messages painted on the walls. A common message was '*Shubh Laabh, Lakshmiji Sada Sahay Kare*' (May Goddess Lakshmi always bless this home). Lakshmi is the goddess of wealth and many Hindu homes have this as a good luck message. These texts had been written by family members. Also a number of houses where marriages had taken place had messages blessing the newly-weds written on the walls.

General Observations

Our observations and discussions clearly showed that it is the men in the community who are generally engaged in writing and reading information in the public places. This was because public spaces are largely out of bounds for women. In contrast, women who had at least been to the literacy centre had written and drawn on walls within the home.

We also noticed a significant difference in the amount of wall-writings in the Dalit and upper-caste *basti*s. The walls of the upper-caste *basti*s looked freshly painted and did not have as much written on them. On enquiring we were told that the houses in the upper-caste *basti* had been recently painted because of *Makar Sankranti*, celebrated a few days before our visit. All castes celebrate the harvest festival, but clearly it is celebrated more grandly by the upper castes. In the upper-caste *basti* the slogans were generally seen on walls of schools and public health centres, and not on the walls of the houses. There were several instances during the village walk when we came across people who knew the content of the message even though they could not read it. Wall-writing seemed to form an important part of the 'background', something that was there but did not really have to be read.

Texts within Dalit Homes



The interviews revealed a wide range of written texts within the homes — wedding invitation cards, school textbooks, account books, visiting cards, land documents, condolence cards, and ration cards. Below are our observations around some of these texts.

Calendars

Calendars — 'English' and the *Panchaang* — were available in a number of homes. *Panchaang* is a type of calendar used by Hindus and has lunar days marked as well. People said that since the *Panchaang* has a lot of details and is difficult to read, most people preferred to consult the *pandit* or religious head in the village for this information. We found that a number of houses had 'English' calendars but reading them did not seem to be an everyday practice. A few said these calendars were used to mark or read dates of important 'official' events — court dates, bank loan repayment dates, etc. Again, this was a male domain. School-going children referred to calendars to find out when school holidays were and so on. Some women who attend the Sahajani Shiksha Kendra educational centre have also started reading calendars. They said that they did so to remember dates of meetings or trainings. A number of the women we spoke to could read the numbers but could not read the days of the week or month.

We found calendars of previous years still hanging on the walls of many homes. Calendars are colourful, have pictures of gods and goddesses and, not surprisingly, are used for decorative rather than functional purposes. Calendars, especially the *Panchaang,* are expensive. Many people wait to get a free calendar, which they could get from a business partner or a shop that they regularly frequent. At election time calendars were distributed with the names of the candidates printed. People rarely seem to buy a calendar.

Financial Records

We found a variety of documents that recorded financial transactions. For example, we found that most households kept a notebook where they recorded different things, in no particular order.

Excerpts from notebook in Siyarani's house The notebook in Siyarani's house had details of various transactions and detailed accounts:

- Money spent on a pilgrimage to Mathura, the distance covered, the amount given as a donation at temple, money spent on *prasad* (temple offering).
- Records of money spent to hire an irrigation machine, the duration for which hired (since the machine is hired out on an hourly rate) and the amount spent on diesel.
- Details of presents and cash received at a family wedding.
- Receipts from Siyarani's son's school.

Clockwise from left: a *Panchaang* (Hindu calendar); a calendar distributed free by political parties; a page from a notebook

Siyarani and her husband said it was important to keep these accounts in joint families, where finances were commonly managed, as they should be able to "answer anyone at any time". Her son and husband had maintained the notebook. Siyarani could not read these texts. She told us that she could read clear handwriting or type but not cursive handwriting.

Every household also maintained a 'marriage gift notebook'. These notebooks have a record of the names of the guests who attended the wedding and the gifts they had given. The records are used to give gifts of the same value in return. Written records are mostly kept as proof to avoid any cheating or for future verification.

> "Accounts are kept not for planning or financial management. People's memories are very good so written accounts are for accountability and for proof. If we need to write things down to remember them, then we might assume that that's why people write things down, whereas that may not be why at all. This shows how our perspective can colour our interpretation."

We found small scraps of paper with numbers written on them in many homes. Non-literate women and men ask for these receipts from shopkeepers when they go to the market to sell small amounts of grain or ghee. They do so to ensure that they are not cheated. They usually get the receipts read by other literate people in the bazaar itself and also bring them home to be checked by their husbands or sons. It is difficult to to decipher what is written on these papers, and women kept referring to it as 'Urdu' to emphasise

that it was in an unknown language (when in fact they were written in Hindi).

In all the households, documents, papers and other records are used, read and managed by the male members in the family. This seemed to follow from the fact that men are in charge of the finances. Women handle small amounts of money and make small purchases but men take decisions regarding larger purchases and sales. But even in situations where women handled money, as in cases where they managed small home-based shops, it was the men of the family who maintained the written accounts.

Women's Access to Written Documents

When we reached Ramsakhi's house we found her sitting at the doorstep. She invited us in. Ramsakhi runs a shop from her home. That is why she wants to learn to read and write. When we told her why we had come, she looked worried. She thought we had come to test her. She kept saying there was nothing in her house, only the children's schoolbooks. It was only after her husband came home that she began to bring out the notebooks (largely because he was instructing her to). When we asked about papers related to the family land, Ramsakhi looked clueless. Her husband got up and brought out the papers. It felt strange that Ramsakhi and I should be in the same situation — we were seeing the papers of her family land for the first time together! We pored over the papers. Ramsakhi turned the pages, her fingers quivering with excitement. After all, it is not every day that a village woman gets to hold and see land papers. As we left her home, she told us that she would probably never see them again.

Research Notes

CONCLUDING OBSERVATIONS

Probably the most important observation emerging from the study is that literacy texts are embedded in relations of power. In this study we saw this in terms of gender and caste relations. What is written, who writes it and who reads it are determined by these relationships. The study shows that access is not neutral. There is written material available but women do not have the opportunities and are, in fact, not permitted to read it. Thus programmes trying to enrich the literate environment or working to get marginalised communities to enter the world of letters must also understand these dynamics.

Following from this is the need to recognise that simply including local texts in teaching-learning material is not enough, unless we also equip learners to engage with these in real-life contexts. For instance, if our programme decides to include reading wall-writing as one of the activities, this would mean negotiating a variety of power relationships, such as dealing with issues of women's mobility in the public domain, even before we could get to the actual act of coding and decoding what is written.

As practitioners we often say that there is hardly any literacy material available in rural contexts. By using a broad definition of what constitutes a text we actually found a rich variety of material available. While it is true that we did not come across many books or newspapers, things were being written and read in the rural context. Moreover, what most literacy programmes, including ours, consider as texts is not what is found in the real world. We found that there was hardly any written material that did not have both numbers and letters. Yet most programmes have separate literacy and numeracy material. At a practical level, we realised that if we are to get women to negotiate locally available material we would also have to help them engage with handwriting and not typed material alone.

The research study was a learning experience for all of us including the 'local' team members who, despite being local, realised that they did not have a nuanced and detailed understanding of locally available texts and the literacy and numeracy practices around these texts. Using an ethnographic perspective to map the literate environment enabled us to understand in greater depth the nature and range of available literacy texts and the larger literacy, numeracy and communicative practices in which they are used and are embedded. Our future efforts in developing curriculum and the teaching-learning process would be enriched if informed by this understanding.

> "I enjoyed just walking around the village and looking at the written texts that were available, noticing things I had not noticed before. We asked them what they have to read and they said, 'Nothing'. Then we collected so many things — betting cards, ID cards, postcards, ration cards, wedding cards …"

FOLLOW-UP SUGGESTIONS

- Explore in greater detail practices around some specific texts that Nirantar feels can be included in the teaching curriculum.
- See if there is a difference in the texts available in the homes of different castes.
- Map what other kinds of textual materials are available, which may not necessarily be 'functional'.

DOCUMENTING INDIGENOUS GAMES IN RURAL BANGLADESH

ORGANISATION
Plan Bangladesh

RESEARCH AND TEXT
S.M.M. Kabir

TECHNICAL ASSISTANCE
Probak Karim (Learning Specialist)

In Bangladesh, the indigenous knowledge and practices of rural communities receive barely any attention from academia or the educational sector. Educated sections of society have yet to recognise and appreciate the rich experiential knowledge of the socially and economically backward people. One such neglected area is the numerous everyday numeracy practices of rural non-literate communities. This study, which documents numeracy practices around games played by rural Bangladeshi adults and children, is a small step towards filling this gap.

INTRODUCING THE STUDY

The study was conducted in northern Bangladesh, which is the least economically developed area of the country. The area has the lowest per capita income in the country. The region is primarily rural and traditional agriculture is the most significant activity here. Forty-seven per cent of the population in these parts is landless and ekes out a living as agricultural labour.

In the *Monga* period, an agriculturally lean period which covers August, September and October, most men migrate to other parts of the country to earn wages. Women and children remain behind in the villages. As there are few employment opportunities, people have spare time on their hands. They often fill this by playing a variety of indigenous games. There are some games which are very popular among children and some among the adults. Along with games, adults also spend their time in *addah*. Riddles and puzzles are common features of these *addahs*. These riddles and puzzles, usually in rhyme, often deal with mathematical concepts. This is an age-old mathematical tradition among poor, non-literate people.

Objectives

The specific objectives of the study were:

- To identify the recreational activities of the people of the targeted communities.

• To understand the role of numeracy in the games played by the women and children of these communities.
• To discover insiders' perspectives of numeracy and its significance in recreational activities practised as part of their daily life.

Methodology

The study was fundamentally exploratory and provides an in-depth documentation of a few indigenous games. As the study adopted an ethnographic approach, the researcher steered clear of making any value judgements. Instead the researcher tried to understand and learn from the practices through observation and informal discussion. Interestingly, these understandings later raised more questions and indicated the need for further investigation, which is mentioned in the later part of this paper.

This was a qualitative study using multiple methods. Informal and semi-structured interviews played a significant role throughout the study. Observation was another important method that helped the researcher understand the people and their practices, and audio-visual documentation of the selected events was used. Filming and interviews were done with the permission of the participants.

The study was conducted in part of Plan Bangladesh's operational area in northern Bangladesh. The study covered two villages. Due to the longstanding goodwill that Plan Bangladesh had generated in these communities, the researcher was welcomed. The recreational games vary from season to season; thus the study only covers those games that were being played at the time of the field visits and is therefore not a documentation of all recreational games.

RESEARCH DATA AND ANALYSIS

Research Data about Three Popular Recreational Games

Game 1: Dang Guli

Number of participants Two to eight, sometimes 10

Material One stick about 6 inches long and another stick 24 inches long

Rules First, a small shallow hole is made in the ground. To decide who will begin, the children put a coin inside the palms of two team leaders in handshake position, and they then jointly throw the coin in the air. The child who wins the toss goes first. The small stick is placed in the hole and the big stick is used to flip the small stick up and hit it as far as possible. If anyone catches the small stick in the air, the player is out.

If the stick is not caught, any of the participants can throw the small stick towards the long stick, trying to touch it or get it within the reach of one hand (measured from the elbow to the middle finger). If thrown successfully, the player who hit the small stick earlier is out. If he is not out, he strikes the small stick with the big one to make it jump in the air and hits it with the bigger stick and tries to hit it as far as possible. This is done thrice and the distance covered is measured with the larger stick by turning the stick end over end. If the player can strike the smaller one two to three times in the air, the measurement will be double or tripled.

Children playing Dang Guli

Analysis This is one of the most popular games played in rural Bangladesh. There are many numeracy tasks hidden in this game. At the beginning of the game, when the player hits the small stick, the player has to estimate the distance to the opposite player as well as determine the angle with which to hit the stick to avoid getting out. Even when the player from the opposing team throws the stick back to hit the larger stick or to reach within one hand of the hole, he also needs to estimate the distance before throwing. Winning is dependent on the best combination of distance estimation, targeting the points and throwing.

The system of keping score helps develop two basic maths skills. The players try to set a score on an approximate mental measurement of the distance through negotiation; otherwise they have to measure the distance with the stick. Sometimes the score is doubled or even tripled if one can hit the small stick twice or thrice at a time in the air. In this situation the players have also to multiply the score by 2 or 3 or have to count in multiples like '2, 4, 6, 8' or '3, 6, 9, 12'.

A point of social significance in this game is its tossing system. Throwing coins by holding each other's hand is a unique example of neutrality. All over the world, a third person is hired for a toss to keep up the neutrality. But here the participating two parties are doing the same without the involvement of a third person.

Game 2: Bagh-Bondhi

Number of Participants Two

Materials Two sets of two types of seeds to be used as playing counters. Each set contains 12 counters.

Rules The figure shown in the photograph is drawn on the ground; usually each side is around 30 cm. The players take turns to put out their counters, which they must place on the joints of the squares. Each player tries to get three counters in a row. If this happens, that player takes one of his/her opponent's counters already placed on the board. Thus each of them tries to take the other's pieces. When all the counters of a participant have been taken, the game is over. The difference between the numbers of counters taken by both of them determines the degree of win.

Women playing Bagh Bondhi

Analysis The winning of the game is completely dependent on the most appropriate selection of points where his/her pieces will be placed. Proper selection and placement is based on the complex skill of strategising. Players also need to anticipate each other's moves and plan moves in advance.

Game 3: Tash

Number of participants Two or more

Materials Empty packet of cigarettes, leaves and broken pieces of pottery

Rules A rectangular box is drawn on the ground. A player stands in this box and throws a broken piece of pottery (roughly round in shape) in any direction. This player bets a specific number of cards or leaves, or a combination of both. Now any of the remaining players tries to throw his piece of pottery onto that piece or as close as possible to it. If he succeeds in doing so, he will get all those cards from the first participant for the amount bet. Otherwise, he has to give those cards, or cards and leaves, of equal value to the first player. He is allowed to pay the amount with any suitable combination cards and leaves.

> "Why is mathematics thought to be mainly about calculating and counting? An analysis of the games shows that they range from pure luck to those that are pure strategy. Numeracy should include strategising or sequencing or generalising — in other words, processes. There are also aspects of competitiveness, social skills like turn-taking, and the mode (no writing, purely verbal/oral) in games. When analysing, we must think, 'What kind of mathematics am I looking for? Processes? Calculations? Cooperative skills?'"

Children engaged in a game of Tash

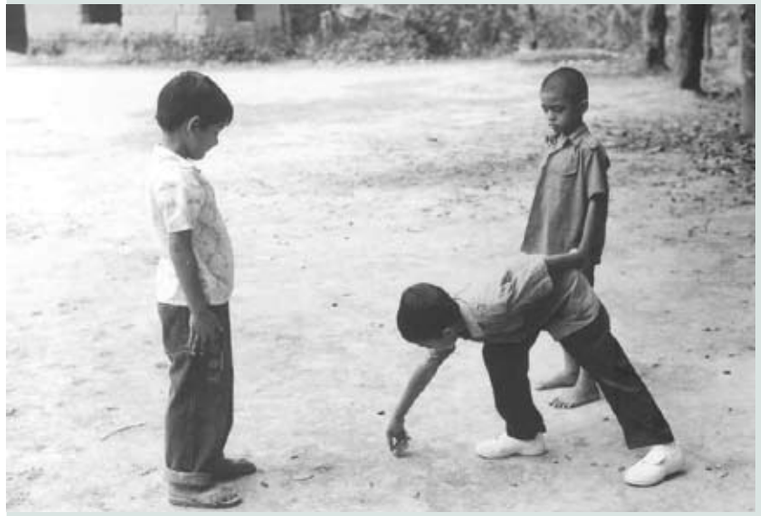
Analysis This is another very attractive indigenous game in rural northern Bangladesh played particularly by boys. Adults do also play the game but they do so with money instead of leaves and cigarette packets. Parents do not encourage children to play this game as it is seen as a form of gambling. However, it has many mathematical implications. In particular, the counting of points becomes complex when the leaves are used as payment instead of cigarette packets, because the value of the leaves and the cigarette packets is not same, and even the value of different types of cigarette packets is not the same. At the beginning of the game, players set the value of a leaf and each type of cigarette packet as 1, 2, 4, etc. To play with materials that have unequal value requires complex conversion skills. Children are acquiring the skill of calculating in a complex yet natural way through this indigenous game.

NUMERACY GOES BEYOND CALCULATING

Kut-Kut and Unish-Bish are two other indigenous games played in northern Bangladesh.

Kut-Kut is played by girls. Estimation of time and space and counting are the mathematical skills involved.

Unish-Bish is played by both boys and girls. Here the mathematical skills are ranking, spatial estimation and counting.



Top: Kut-Kut, a game popular with girls. Left: Boys playing Unish-Bish

CONCLUDING OBSERVATIONS

Some of the significant insights that emerged from the study:

- Almost all the games required numerical skills. However, it was interesting to discover that, when asked, the participants of those sports events did not recognise these numeric activities as 'valuable' or as being 'authentic' mathematical knowledge.
- The perception of being numerically literate was found to be absent in the community.
- Most of the numeracy skills required for these games were verbal and not written.
- The key numeracy skills required in the day-to-day recreational activities ranged from simple mathematical concepts and skills like counting, addition, subtraction, multiplication, division and measurement to highly complex concepts and skills such as proportion, estimation, ranking, strategic decision-making, applying logic in a situated context, identifying geometric shapes, angles, and stratifying objectives.
- The numeric skills as practised in the daily lives of these people is normally not recognised by the literate parts of the society as 'official knowledge or skills'. The rural people, in turn, learned to internalise these values and they too refuse to recognise this as official or formal knowledge.

> "Using ethnographic research methods was completely new for me and it gave me a completely different way to look at data. I discovered people doing a different kind of complex calculation, but I don't know how they were calculating it!"

FOLLOW-UP SUGGESTIONS

- A subsequent research study could be to see how the numeracy skills involved in the games compare with those included in the formal school curriculum of the classes that the boys were studying in and explore how this knowledge can be included in formal school education.
- Explore social issues around games in terms of gender and social class: Who plays these games? Where? Do girls play outdoor games? Do girls and women have as much time to play games? In addition to the rules documented, narratives of children's experiences around these games should be included.
- The conversations with the children on the rules of the game could also be taped, because people usually have different interpretations of rules and change rules, which is also interesting. The researcher should incorporate the prior knowledge he had about the games into the write-up.

UNDERSTANDING NUMERACY PRACTICES IN A SKILLS-TRAINING PROGRAMME IN NEPAL

ORGANISATION
World Education, Nepal
Kathmandu, Nepal

RESEARCH AND TEXT
Juna Maya Koirala Pandey, Deeva Yonzan Lama

This report describes an attempt to apply an ethnographic lens to gain an understanding of the numeracy-related practices and experiences of girls who have participated in two of World Education's non-formal education programmes for adolescent girls. The study observes two groups of girls during a vegetable-farming training with a general focus on their numeracy experiences and practices. This documents the difficulties the girls had in switching between traditional and standard practices. It also records the ways in which girls do mental maths calculations.

INTRODUCING THE STUDY

Many girls in Nepal, especially in rural areas, do not have the opportunity to attend school for various socio-cultural, economic and political reasons. Since 1998, World Education and its local implementing partners have been providing educational opportunities to out-of-school adolescent girls in Nepal through the Girls' Access to Education (GATE) Programme. This nine-month-long, non-formal education programme aims to provide girls who have been left out of formal education – either never having had the chance to enrol or having had to drop out early – with a strong foundation for learning. This not only focuses on their literacy and numeracy skills but also on building their life skills and ability to lead a healthy life.

World Education and its implementing partners first piloted the Self-Employment Education Program (SEEP) in 2003. This is a 12-month programme, of which the first six months are spent on basic economic education and the next six months on a group discovery-learning exercise on how to run a business. Participants also choose an area in which they would like to build a business after the programme, for which they receive practical skills training. The SEEP classes target 14- to 18-year-old adolescents (to date, most have been girls) who have completed a non-formal education programme such as GATE or have dropped out of school.

Research Methods

We observed two SEEP groups. Both groups were located just west of Kathmandu city, in Goldhunga and Gangabu localities. We selected these classes as they had large numbers of GATE graduates. Change Nepal was the local implementing partner. Rather than have pre-determined questions guide our research, we decided to observe the vegetable-farming training and take notes with a general focus on their numeracy experiences and practices. The observations would then guide us into broad questions or themes to further explore in conversations with participants. We observed the training in commercial vegetable farming over three days, and then held a focus-group discussion with four participants. With the consent of the girls, we used a tape recorder to record the discussion, which we later transcribed.

In order to understand the girls' numeracy experiences and practices, we set out to study:

- Numeracy practices in a SEEP class: The methods used were observation and visual documentation of the class.
- Comparison between the numeracy curricula of GATE and SEEP: The methods employed were focus group discussions and a study of curricular materials of both programmes.
- Numeracy experiences of GATE graduates now enrolled in SEEP: The methods used were informal interviews and focus-group discussions with GATE graduates participating in SEEP and with the facilitator.

RESEARCH DATA AND ANALYSIS

Numeracy Practices in Commercial Vegetable-Farming Training

Over three days, we observed the commercial vegetable-farming training. On the first day we stayed for a couple hours listening to the theoretical lecture. On the second and third days, we observed the practical aspects of the training, where the trainees and their facilitator (plus guest facilitators who had run other SEEP classes for Change Nepal, the implementing organisation) worked on a plot of land they had prepared near their class site. Following instructions from the trainer and observing the trainer's modelling, the girls prepared a seed-bed, added fertiliser to the soil, planted vegetable saplings, and watered the plants. We attended the training as observers and made a note of any examples or mention of numeracy-related practices we encountered. In this process we found examples of different uses and concepts of measurement units, particularly measurement units of size and volume.

Left: A trainer measuring a seed-bed with a measuring tape.
Right: Trainees using a stick to measure

Use of Measurement Units

A. Measuring the size of a seed/vegetable bed

Observation During the theoretical session of the training on commercial vegetable farming, the trainer repeatedly explained that an ideal size of a seed/vegetable bed for growing vegetables is 'one metre' wide. He explained that if the beds were of this width, it is convenient for people to work without stepping on the vegetables.

During the practical session of the training, the trainer used a measuring tape to measure a stick to make sure it was approximately one metre long. He then had the girls use this stick to measure the size of the seed/vegetable beds.

Participants' knowledge & views In the focus-group discussion, we asked the participants what the ideal size of a bed should be, why it should be that size and how they could measure it. It was amazing to discover that the participants thought that the bed they made was nine inches. The phrase 'nine inches' was never mentioned during the training, either at the theoretical or practical session. In spite of the phrase 'one metre' being repeated several times during the training, none of the four participants remembered it. When we asked them how they used to measure beds earlier, they said, "Our parents do it. They don't measure like Sir did. But, the beds they make and the ones we made now are of the same size. They know it by practice."

Later, we explained to the participants that the ideal width of a vegetable bed should be one metre. We also asked them how they could measure one metre, to which they promptly replied, "*Ek haat ra ek bitta*". This means the length of your hand from your elbow to the middle finger plus the length of your palm.

Reflection This example gives us a general idea on traditional versus formally learned agricultural numeracy practices. Here we can see how people who do not have formal knowledge of making 'correct' sizes of beds have been making beds that are approximately one metre. They just know it by practice. When they said that the bed would need to be nine inches wide, it was a random number. It appears that the width the trainer had mentioned was a purely abstract concept to them, which had no association with the actual size of the bed they knew they needed (from practice).

It was interesting that the trainer, after measuring a stick with the measuring tape, asked the girls to use the stick for their practical application of what they had learned. The girls were not themselves asked to measure one metre. Once the stick showed the girls the approximate length necessary, they did not have to, thereafter, worry about measuring an exact metre. The formal measurement was done by the trainer, and the girls used the informal way to measure by using the length of a stick.

> "What is being taught in class is not being learned by the girls and they resort to what they have learned at home or on their own, and this is what we must understand and then incorporate into our programmes."

B. Measuring the volume and proportions of seeds and fertiliser

Observation I We had noted during the theoretical session that while talking about different kinds of seeds, the trainer had said that only 50 per cent of the seeds of bitter gourd actually germinate.

The trainees understood that 'per cent' means 'out of hundred' but could not apply it to real-life contexts

Participants' knowledge and views We asked the girls if they had understood this, especially what he meant by '50 per cent'. After thinking for quite a while, the girls said that 50 per cent meant '50 out of 100'. We then asked them what 20 per cent meant. They said it was 20 out of 100. Assuming they were clear about the concept of percentages, we asked them what it meant when the trainer said, "Only 50 per cent of the seeds germinate." Surprisingly, none of the girls could give us the answer.

Reflection Though the girls understood that 50 per cent of 100 was 50, they could not figure out what we meant by '50 per cent out of 100 seeds germinate'. In other words, they were completely unaware that 50 per cent simply means 'half'. It seems that they understood the concept that percentage means 'something out of 100' but could not convert, apply or transfer it to other amounts or real-life contexts.

Observation II Another numeracy-related concept that came up in the training related to the different labels found on the packets of fertilisers. The trainer had said that consumption of 600 gm of fertilisers that were labelled green was harmful.

Participants' knowledge and views When we asked the participants what they understood by what the trainer said regarding the consumption of 600 gm of green-labelled fertilisers, none of the four participants remembered hearing this. This led us to ask them if they knew what a gram was. All of them said, "100 gm is one *pau*." We then asked them which was larger, 1 kg or 500 gm, or whether they were equal. Three of them said 1 kg was not larger while one said "yes" (they are equal).

Reflection *Pau* is a very common unit used to weigh vegetables and other food items. In some parts of Nepal, 250 gm is considered equal to one *pau* whereas in other places, 200 gm is considered equal to one *pau*. Although the SEEP numeracy curriculum included a lesson on grams and kilograms, the girls did not seem familiar with it or did not seem to remember. It did not appear that they had internalised the meaning of these measurement units or that they were familiar with using them.

C. Conceptualisation and understanding of measurement units

Observation I As mentioned earlier, the trainer had used a measuring tape to measure one metre for a vegetable bed. In the field, we did not see any girls actually using the tape themselves to measure beds. So we wanted to know if they were familiar with using the tape.

Participants' knowledge & views The girls said that the measuring tape used by the trainer to measure beds was called a 'Centi Tape'. They also knew that there were numbers written on the tape but had no idea what those numbers represented. We explained to them that a measuring tape had inches on one side and centimetres on

the other. They were completely unaware about these measurement units (centimetre and inch). However, they knew that metre measured clothes and kilometre measured distances. According to them, they knew this based on what they had heard in their day-to-day lives.

Reflection Though the SEEP curriculum includes lessons on measurement units, our participants had not heard of some of these measurement units. They were not aware of units like centimetres and inches which are not as frequently used in everyday life as units like metres and kilometres. Here we can see the difference between formal and applied learning. They did not seem to retain as much of what they had learned formally in class as they did of what was applied in their lives.

Observation II In several instances, the trainer used traditional concepts of measurement units in his instructions to the girls. For example, he said that in winter a one-metre-wide seed-bed would need to be covered with plastic. The plastic would need to be held over the bed with thin pieces of bamboo or otherwise pliable sticks that are *paanch haath* or 'five hands' long (one *haath* is from the elbow to the tip of the middle finger).

In another example, the trainer said that for each plant they were planting (eggplant saplings), they would need to add one teaspoon of urea to the soil before planting. Although he said one teaspoon, he asked the girls to estimate how much that would be with their hands and used his own hands to demonstrate. They then used their hands to measure the amount.

Reflection In the training, and interview about the training, we found a constant verbal switching between formal and traditional agricultural measurement units. Even the trainer several times explained measurements in traditional measurement units.

Formal versus Informal Numeracy Practices

In the focus-group discussion, the participants had mentioned that they were confident of themselves when shopping on their own. So we asked them how they did the actual calculation in shops. They said that they did it in their minds. This led us to probe their informal numeracy practices further by giving them maths exercises to solve. Some interesting results we found were as follows:

The girls were given numeracy exercises, some to be solved mentally and some on the board. We observed that they were much more accurate and quicker to compute the answer in their minds than when working it out on the board. For example, the following exercise was given to them to solve on the board:

"Meena has Rs 68. She spends Rs 25 buying meat, Rs 12 buying noodles and Rs 5 on tea. How much does she have left?"

A trainee take her time doing written calculations

The girls could not solve this problem on the board even after taking a lot of time. But all of them said that it would surely not have been so difficult if they were asked to calculate this mentally.

"With measurement, in formal maths we see that we have to have formal answers: 143 cm + 62 cm = ? There is an exact answer. An 'inexact' answer is counted incorrect. But in real measurement practices such as in gardening, we don't need exact answers! And so in formal maths, suddenly they have a wrong answer, whereas in life, their answer is not wrong; it is an answer that varies depending on the flower-bed or garden or whatever. And so we need to say that in the classroom we are playing a game (formal maths practices) and acknowledge that game."

An 'inexact' answer on the board

We asked the girls how much money they would have with them if they spent Rs 15 out of Rs 50. The answer '35' was very prompt and accurate. They said that they were quite familiar with these numbers and just knew it. There was no need to even calculate.

Counting on fingers is one of the most common methods of calculating numbers. People either bend their fingers to count or count the lines on their fingers to add or subtract numbers. And we saw them do this very quickly.

We also asked the girls how they would deduct one number from another mentally (eg: 50 minus 21). One of the girls explained that she would first split the number into two halves (50 into 25/25), deduct 21 from one half (25 - 21 = 4), then add that number to the other half (4 + 25 = 29). She got the correct answer this way.

Similarly, another girl said she split the number (50) into 20 and 30, deducted 21 from the number 30 (30 - 21 = 9) and added 9 to the other half 20 (20 + 9 = 29). Hence, she also got the correct answer.

Reflection The girls found formal numeracy more difficult compared to informal numeracy. The sums that could be easily solved informally could not be solved using formal methods. Each individual has his or her own way of practising numeracy.

An informal interview was done with the two SEEP facilitators who were present at the focus-group discussion. One of them had solely GATE graduates in her class, while the other had school dropouts who were not from GATE. The facilitator who had GATE graduates said that it was very difficult for her participants to cope with the maths lessons of the SEEP class. According to her, the maths lessons in SEEP are much more complex compared to the GATE maths lessons. The other facilitator did not find it so difficult to cope with the maths content with her participants.

CONCLUDING OBSERVATIONS

During the vegetable-farming training, both the trainer and the participants switched between traditional units of measurement and formal metric units. The girls seemed to have a very superficial understanding of the metric units. They had heard of metres, kilometres, grams and kilograms. However, they seemed uneasy and unsure when they had to apply the concepts. They had been introduced to these concepts: that was also clear once we reviewed the content of the numeracy curriculum of SEEP. However, the SEEP curriculum does not mention the traditional measurement units (for example, a '*pathi*') at all, and as a result, does not provide a relation or comparison between the two systems. In the girls' village, the traditional units are still commonly in use, as they continue to be elsewhere in Nepal. If they are not used exclusively, then they are used alongside or parallel to the metric system. Perhaps for the girls to be able to internalise and practically apply the newly learned formal measurement units, they need to be able to see a clear relation between the two measurement systems. For example, approximately how many kilograms of rice grain fit into a *pathi*? How many *haath*, as a measurement of size, make a metre? Such comparisons and conversions might help them understand the different units more clearly.

No matter what formal methods were taught in GATE, SEEP, as well as in the vegetable production training, the girls resorted to the traditional and/or informal ways of doing numeracy activities that they were used to — whether it was in their daily activities such as shopping or the farming activities they had observed and helped their parents and other community members with.

After the trainer used the measuring tape to measure one metre on a stick, the girls used the stick to measure the vegetable beds thereafter. None of them showed interest in using the measuring tape. It was as if the formal measuring with centimetres was appropriate for the trainer, who was in a position of respect and power (especially with all the theoretical knowledge he had lectured them with), but not necessary for the practical use of the girls.

This leads us to the question: What use is there really for the formally-taught measurement system in the girls' lives, as they seem to have a system of their own that works for them? Yet, the reality is that they do encounter the formally-taught metric system. We can argue that it is meaningful to include the metric measurement units in a curriculum like SEEP, but *how* we do this is the question. How can we help them feel comfortable and confident with both systems — the formally-taught and the traditional, informally-learned systems of measuring? We believe that if the girls were able to have a sense of how the different measurement units in the two systems compare and relate with one another, they might be more comfortable switching between the two.

> "Doing the research was interesting but analysing it was not! Making links between different observations was difficult."

FOLLOW-UP SUGGESTIONS

- Explore how findings can feed into modifying the numeracy curriculum of the non-formal education programme and the micro-enterprise development programme.
- Further research the maths background, experiences and teaching methods of the facilitators, as that will impact the learners, although perhaps not as directly as might be thought.

UNDERSTANDING HOW MUSLIM WOMEN IN JAIPUR SLUMS DEAL WITH LITERACY AND NUMERACY

ORGANISATION
Bharat Gyan Vigyan Samiti (BGVS)
Jaipur, Rajasthan, India

RESEARCH AND TEXT
Komal Srivastava

This ethnographic study was undertaken in two slums of Jaipur by Bharat Gyan Vigyan Samiti (BGVS). The study attempts to explore the literacy and numeracy practices of Muslim women living in these slums, as they went about their daily interaction with shopkeepers, or in their calculation of wages for work. The study also documents their engagement with the literate environment in which they live.

INTRODUCING THE STUDY

Bharat Gyan Vigyan Samiti (BGVS), Rajasthan has been working in slums of Jaipur since 1999, providing educational programmes and support for socially vulnerable and disadvantaged women and children among the Muslims and Hindu Dalits. Schools were built and Bal Manchs (Children's Forums) were created.

In addition, women were organised into Samata Committees (BGVS' Women's Front) and self-help groups (SHGs): 12 such groups were formed. These groups have been operating for the last three years, and one group has accumulated as much as Rs 100,000 in savings. Such programmes are important in today's context as the urban population of the state is increasing and there are hardly any programmes that address the needs of the urban poor. Most of the development programmes address the rural masses.

Research Design and Methodology

The slums studied were Rajiv Nagar and Banda Basti, located in the Vidyadhar Nagar zone of Jaipur. Detailed field notes were taken, as also some audio recordings. The tools used were observation, focus-group discussions and individual interviews. Photographs were taken.

The women we interviewed were 25 to 55 years old. Some were members of SHGs mobilised by BGVS. Most of the women were illiterate but were involved in an

economic activity such as embroidering saris or doing *bandhej* (tie-and-dye work) to make a living. Some of them run small shops. All these activities involve dealing with numbers. Initially a long list of research questions was formulated. This was later narrowed down to two questions:

- How do the women deal with the literacy around them?
- How many numbers do they know and what are the methods of calculations that they use?

A view of the basti

Description of the Study Setting

The population in these *bastis* (neighbourhoods) comprises Muslims and Hindus. The Hindu community belong mainly to the Scheduled Castes. Hindus and Muslims live in harmony. Riots have never taken place in these *bastis*, though tensions flare every time there is a communal problem in Jaipur. The residents are migrants from various parts of rural Rajasthan, Bihar and Uttar Pradesh who have come to the city over the past 25 years. These *bastis* are slums that lack basic facilities such as healthcare, reliable water supply, sanitation, etc and the living conditions for families are very difficult. Women lead difficult lives. Domestic violence is prevalent in this area. There are a number of women who are separated or divorced and who have to raise their children single-handedly. They are under constant stress to meet their livelihood needs.

Livelihood

The men here are mainly daily wage-earners: construction labourers, rickshaw pullers, mechanics, workers in gemstone factories. On average, they manage to get 15 to 18 days of work in a month and earn about Rs 2,000 a month. Women are also daily wage-earners and take up employment within the *basti*. They may also work from home, making bangles, doing *bandhej* or embroidery on saris, or gem polishing. They earn Rs 700-800 per month. There is immense exploitation of women in *bandhej* work, since they only receive Rs 4-10 per sari or cloth depending on the amount of tying they have to do, but the work is very time-consuming and hard on the eyes. For embroidery on saris they get Rs 17-25 per sari; if they buy the thread themselves, they earn Rs 2-3 extra. On average, it takes them six to seven hours to complete one sari. Payment is made once every week or two.

Girl embroidering a sari

Education and Health

The level of education is very low among the women. Most are illiterate, though the women have now started sending their daughters to the *Janshala* schools located in the *basti*s. Most girls go to the *madrassa*, where they are taught the Quran orally. Women and girls are inducted into religious education called *Kalam Pak*.

Women involved in *bandhej* work have to tie the cloth very precisely; it requires a lot of concentration and puts a lot of strain on the eyes. It weakens the women's eyesight and can gradually lead to blindness. Women involved in gem polishing inhale a lot of dust which is released while polishing the stone. This dust can be very harmful and can lead to silicosis.

Women outside a local school

RESEARCH DATA AND ANALYSIS

Aspects of the Literacy Environment of the Women

There are a number of wall writings and posters in the *basti*. The women did not read the posters or writings, although they comprehended the pictures. Some women felt that the written content on the wall or posters was meant only for rich people, and therefore it was irrelevant whether they understood the messages or not.

For example, a frequently seen poster is from the government dairy corporation Saras, which shows a small girl drinking a glass of milk with an official requesting everyone to drink a glass of Saras milk. The women understood that girls should be given milk. They all recognised the brand, as it is the most popular dairy, but they can't buy it as it is expensive.

They all have a calendar in their houses. They don't recognise the written words but they can recognise the pictures. Some women knew the script of numbers but generally couldn't recognise individual numbers like 1, 2, 3, 4, 5 when randomly asked. However, they recognised the pattern in which numbers were written on the calendar. They use calendars to keep records.

Profuse writing across the walls of the *basti*

Very few women were interested in reading newspapers, but one was very interested in the news. She said she would pick up the newspaper and hold it as though she could read it, but she only looked at the pictures. She would usually ask her husband or children to read the news aloud to her.

When asked how they managed to board the right bus or get off at the correct station, the women said they were unable to read bus numbers or signs, so they asked the conductor to announce the stop where they had to get off. They remain very alert and at times even ask their fellow passengers. There were incidences when some of them had lost their way by getting off at the wrong bus stop.

Numeracy Practices of the Women

The women engage with numbers while purchasing goods, and in the work they do such as embroidery, *bandhej* or running a shop and so on. Most of the women we spoke could count up to 30 and thereafter could count in tens: 30, 40, 50 etc.

How Women Deal with Calculations Involved in Purchasing Goods

Below are some examples of how women calculate:

Two women manage a shop

Case 1: Bismillah, of Vijay Nagar

Question: If you have to buy 4 kg of sugar, and 1 kg costs Rs 22, then how much do you have to pay?

She immediately replied, "80 and 8". We asked her how she made the calculation. She said she split 22 into 20 + 2, then 20 in four places (times) is equal to 80, and then Rs 2 in four places (times) is 8, so it is 80 and 8.
Then she would make the payment.

Question: 1 kg of milk costs Rs 15. How much will 250 gm cost?

Bismillah replied that half a kilo would cost Rs 7.50, then half of half would be 3.
But this is wrong.
When asked how she calculated, she said she did it mentally.

Bismillah's methods: Decomposing numbers and approximation

Case 2: Afea, of Banda Basti

Question: If you were going to buy four items from a shopkeeper and one cost Rs 10, another cost Rs 27, a third cost Rs 34, and the last cost Rs 30, how much will you have to pay? How would you make the payment?

Afea said that she couldn't get a total but that she would make separate payments for each thing, paying 10, 27, 34 then 30. If the shopkeeper then gave her some change she would try to total or ask the shopkeeper to do it. She always takes a slip with the goods bought and then gets her husband to cross-check the calculation.

Afea's methods: Paying separately and asking for written receipts

Case 3: Jebun, of Rajiv Nagar

Question: If bhindi costs Rs 20 per kg, then how much will 250 gm of bhindi cost?
Jebun replied Rs 3. When we asked how she calculated, she said that normally vegetables cost Rs 3 or 4 for 250 gm so it should be Rs 3.

Jebun's method: Using experiential knowledge

From the above examples it is very evident that women do calculations mentally but encounter limitations when doing big calculations, as they don't know large numbers. In most cases they make educated guesses, which means that they do lose out on small amounts. When buying goods, many women ask the shopkeeper to make receipts for the goods bought so that they could have it cross-checked it at home. Some felt that if they were educated they would not have to be dependent on another person.

How Women Deal with Calculation of Payments Due for Piecework Completed

Women discuss their calculation methods

Case 1: Jannat, of Banda Basti
For doing embroidery on one sari she gets Rs 17. Payment is not made every day; it is made upon completion of sets of four, five or seven saris.

Question 1: How do you keep track of how many saris you have completed?
Jannat replied that she draws lines on the wall, one for each sari completed: | | | |

Question 2: How would you calculate the payment for four saris?
Jannat calculated like this: For one sari, she gets Rs 17.
For two saris, Rs 17 + 17 = Rs 34
For three saris, 34 + 17 = 50 + 1
For four saris, split 17 into 7+10. So add the 10 to the 50 (above) and add the 7 to the 1 (above). This becomes 70 minus 2.

Jannats's method: Adding and splitting large numbers.

Interviewees tell their stories

Case 2: Kallo, of Rajiv Nagar
Kallo does *bandhej* work on cloth. For this work, she is paid Rs 4 to 10. The amount depends on the kind of tying to be done on the cloth. She doesn't get work every day, maybe 15 days a month. Payment is made once every 15 days but it can also take up to three months.

Question: If you have tied 15 cloth pieces of different rates: seven pieces of Rs 4 each and then three pieces of Rs 5 each, and five pieces of Rs 7, how much should you get paid?
Kallo calculated in this way:
First we will calculate of five pieces of Rs 7
One piece is Rs 7
Then for two pieces, 7 + 7 = 14
For four pieces 14 + 14 = 30 - 2 which is 2 - 30
For the fifth now add 7 to make it 39.

She realised it was wrong so she did the calculation again:
Two pieces is 7 + 7 = 14
Four pieces is 14 + 14 = 30 - 2
For the fifth now add 7 by splitting 7 into 2 + 5
Then add 2 to the (30 - 2) so it becomes 30, then 30 + 5 = 35.
For this calculation she used her fingers, counting four on one finger.

Other questions we asked were also calculated in a similar manner, and after some time she didn't want to calculate any more. She said that in spite of calculating like this nobody could cheat her because her daughter-in-law kept the record in a diary and always cross-checks.

CONCLUDING OBSERVATIONS

When asked explicitly, the women said they felt confident in dealing with the literacy and numeracy around them. But we have seen that in many cases the women made errors while making their calculations. They were unaware of how much they were losing in their interactions with shopkeepers and contractors. So while at one level it was heartening to see that they do not see their 'illiteracy' as a huge barrier, we also realised that there clearly were areas where they were at a disadvantage, which they had learnt to live with.

Women see the written word everywhere and can 'read' posters and wall-writing and calendars through visuals or other markers and have learnt to negotiate various texts without actually being able to read them. They recognise photos and make their own interpretations. They also feel that the things written on posters or hoardings are not meant for them as they are very expensive. The women were in the habit of keeping records either in a diary provided by the business owner (written by someone else) or by making lines on the wall or ticking on the calendar. Their practices were thus a mixture of the traditional and standard.

Their calculations are limited largely to addition and subtraction. They can do small calculations but not big ones, as they get very confused with many figures. They don't know the names of numbers beyond 30. After that they only know the names of multiples of 10s — if a number is 38, then they will express it as '2 less than 40'.

> "Documenting the way women calculate was really challenging as after they tell you the answer it is difficult for them to retrace the steps. They get frustrated. But I was also surprised at how confidently they sometimes gave me the wrong answer."

FOLLOW-UP SUGGESTIONS

- Explore how this understanding can feed into developing teaching-learning material for the programme.
- Do a more detailed analysis of the women's record-keeping practices and all their different practices around their *bandhej* work.

DOCUMENTING OCCUPATION-RELATED NUMERACY PRACTICES OF RURAL ADULTS IN ANDHRA PRADESH

ORGANISATION
Andhra Pradesh Mahila Samatha (MS) Society
(A Mahila Samakhya Project of the Government of India)
Andhra Pradesh, India

RESEARCH AND TEXT
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This study, conducted in a village in the Telengana region of Andhra Pradesh, attempts to document the numeracy practices of adults, from various caste, gender and occupational backgrounds. Through visits to the field, focus-group sessions and interviews, a documentation of the local numeracy practices and their interface with 'standard' systems and practices was presented.

INTRODUCING THE STUDY

There is a gap between formal numeracy methods and everyday numeracy practices that rural people follow in their daily lives. Often, adults find the formal mathematical methods — usually taught in adult education programmes — complex and irrelevant to their daily needs. Most programmes, including the Mahila Samakhya (MS) programme, do not build on the existing numeracy practices that people use in their daily lives. We believe that by understanding such practices we will be able to develop sustainable literacy and numeracy programmes.

Objectives of the Research

- To understand and validate everyday numeracy practices and mathematical skills of people in the study area.
- To critically examine and explore the possibility of applying these practices in adult-learning processes, particularly numeracy programmes.

Methodology and the Study Setting

We conducted the study in one village in the Telengana region of Andhra Pradesh where the MS programme is operational. During initial visits to the study village we realised that people's numeracy practices have a definite relationship with their occupation, which in turn is determined by caste and gender. Based on this realisation, we decided to understand and document numeracy practices of adults of different occupational and caste groups. We talked to men and women from 12 caste groups.

The study was exploratory and what we have is a documentation of practices and obsertions. Further work is required to generate generalisations.

"The methods we used in our research were: regular field visits, observations and interviews, collecting local puzzles and games, case studies, photo documentation and focus-group discussions, all held in mixed villages. We worked with homogeneous groups when questions were related to occupations, and with mixed groups when discussing games and puzzles. As needed, we returned to the village for more research."

Researchers engaged in a group discussion

The selected village, Baswapur, is a typical Telangana village. For administrative reasons, the state of Andhra Pradesh is divided into three regions: Telengana, Rayalaseema and Coastal Andhra. Every region maintains its uniqueness in terms of cultural, social, geographical and other economic conditions. The Telengana region was ruled by Muslim rulers (the Nizams) for several years. The language and culture of this region reflects this. The study village is situated in Pulkal Mandal of Medak district, 5 km from the *mandal* headquarter and 35 km from the district headquarters. A *mandal*, known as a 'block' in other parts of India, is an administrative unit. States are divided into districts, and districts are further divided into blocks or *mandals*. Based on educational indicators, some *mandals* are designated 'Educationally Backward'. Though geographically close to the capital Hyderabad, Pulkal Mandal is considered an Educationally Backward block.

The village comprises 250 households with a total population of 2,000. The main occupation in the village is agriculture. The village is segregated on caste lines and a majority of the people still depend on caste-based occupations. Baswapur is a multi-caste village and people's numeracy practices revolve around their occupations and related transactions and, as occupations are determined by caste, we find that numeracy practices of different castes vary. Thus, it is very important to know the caste structure and occupations to understand people's numeracy practices.

RESEARCH DATA AND ANALYSIS

We talked with people individually and in groups in order to learn about their numeracy practices. We looked particularly at two areas: traditional methods of measurement and local methods of calculating. Below we present a documentation of these.

Local Units of Measurement: A Documentation

We observed that people have traditional ways of measuring different things. With the introduction of the metric system, they have to negotiate between these two systems of measurement. The system is elaborate and there are local terms for all the different units of measurements. Below are examples of local units of measurement and in some cases a rough and ready conversion chart between the two systems — often referred to locally as the 'old' and 'new' systems. The standard system has a base of multiples of six and people still use that system within the village economy. The metric and the decimal system uses a base of 100: people are often confused between the two base systems.

In agriculture When enumerating amounts of agricultural, horticultural and other products, many measurement units, which have local terms, use references related to the hand:

For volume A pinch = *chitikedu;* a fistful = *guppedu/pidikedu;* a handful = *charedu*
For lengths Four fingers' length = *bethedu;* an elbow's length = *mooradu*

There are specific containers to measure grains and pulses. These volume measures are rough approximations and vary with the kind of grain being measured.

1 *sola* = 750 gm; 1 *thavva* = 1.5 kg; 1 *manedu* = 3 kg; 1 *adda* = 6 kg; 16/17 *adda*s = *thumudu;* 1 *mudumanikalu* = 9 kg; 1 *kuchedu* = 12 kg; 1 *kuchedu manedu* = 15 kg

Measurement of Metals There are traditional terms for measuring metals. And different metals may have different unit measures. For gold and silver it is: 1 *maasam* = 6 gm; 1 *thulam* (old system) = 12 gm; 1 *thulam* (new system) = 10 gm
For iron 1 *seru* = 1.5 kg; 1 *madama* = 12 kg; 1 *quintal* (old system) = 120 kg

Left: Interviewing toddy producers. Right: A mason uses a rope to measure

Even toddy (locally-made, cheap liquor) producers have their own system: 1 *burra* = a container of 12 bottles; 2 *burrras* = 1 *pette* = 24 bottles

Even though the metric system has been introduced these measures are still used within the village economy.

Gajam, the King of all Tools

Masons and carpenters have an elaborate system of local measures. These measures relate to metric measures and they 'switch' between the two systems.
Angulam = 1 inch; *adugu* = 1 foot; *gajam* = 3 feet

> "The *gajam* is the king of all tools. Though I use a tape measure now, nothing can beat the *gajam*."

The *gajam* is a 36-inch stick which is divided into 24 equal parts and each part is called a *thassu*. So, 1 *thassu* equals 1.5 inches. There are different symbols for a quarter *gajam* (*paavu*), half *gajam* (*artha*), three-quarter *gajam* (*muppavu*).

There are implements for other tasks as well. For example, a *kaivaram* is a compass (and there are compasses of different sizes) and a *metna* is used to draw straight lines and to check angles.

Are Measures Standard?

When we were exploring how people 'measure' milk, we realised that their perceptions of quantity were closely linked to their selling practices. We found that while they measure in 'standard' units (litre), when posed the question, "How do you measure

milk?" there was an immediate counter question, "What kind of milk? Pure or diluted?" The question was answered by an explanation of the process of acquiring and selling the milk. Below is a brief account of this explanation:

First they collect milk from the people who have cattle, for Rs 8. They mix 1/4 litre of water with 1 litre of milk. They sell this diluted milk to restaurants in town for Rs 10.
When they sell to the local teashops, they mix equal ratios of water and milk and sell it at a price of Rs 8.

Sometimes they sell milk to sweet shops to make a particular kind of sweet called *kalaakhand*. That sweet is measured in *thulams* (1 *thulam* = 10 gm). For one *thulam* of sweet, the sweetshop pays the milk vendor 60 paise. To see how much he has to pay, the owner of shop takes one litre of milk and makes the sweet in front of the vendor. He pays the amount due based on the weight of sweet produced.

Understanding Methods of Calculation

In order to understand people's methods of counting and calculations we gave some exercises to men and women (separately) from different caste groups. We first explained the purpose of the exercise so that people were at ease and did not think that we were testing them. For counting, we gave them some seeds and asked people to count them.

The following are some sample calculations based on questions we asked:
Question 1: If the daily wage is Rs 25 per day and you worked for a week, then how much pay should you receive?
The most common method used for this calculation was:
Step 1: 25 is split into 20 and 5
Step 2: Then they worked with 20 x 7 days. For this they dropped the 0 from the 20 and work with 2
Step 3: They calculate that 2 x 7 = 14. They then 'return' the 0 to the 14 to make it 140 (20 x 7)
Step 4: They then took the 5 and multiplied it into 7: 5 x 7 = 35
Step 5: Then they return to the 140 and split 140 into 40 and 100

Step 6: They added 35 to the 40: 40 + 35 = 75
Step 7: Then added 75 to the 100 that remained: 100 + 75 = 175, the final answer

Described this way the process sounds very long. However, these calculations were done very quickly and without any pen and paper. A similar process of 'decomposing' numbers into smaller more manageable units and then 'recomposing' the numbers was followed in other questions that were put to people. Understanding the different steps was both interesting and difficult as our questions were often met with puzzled looks. A typical response was, "We have never thought about how we get these answers."

Despite asking several times, we were not clear about how they arrived at the answers to the multiplication steps so quickly. For example: 2 x 7 = 14. But they always got it right. We surmised that though they had not formally learnt multiplication tables, the fact that they had probably done this several times over they had come to 'learn' multiplication tables. We also found that people were very comfortable and quick with adding successively (i.e. 2 + 2 + 2 + …). They knew the process but did not have a name for it.

> "We asked some people how they got the answer to the questions we asked them. They said the answer came from God, or from their stomach or it's in their head. They didn't know it is called multiplication, but they do it very quickly in their head."

What Determines Abilities to Calculate?

We found that comfort and familiarity with numbers and the speed with which people calculated depended on the extent to which people encountered numbers and were required to calculate in their everyday lives. This again was determined by social hierarchies of gender, caste and community.

Left: A group discussion with Dalit women.
Right: A researcher observes a man and a woman counting seeds

Consider the following observations: In the Dalit communities, women counted seeds in ones, twos and fives, but men counted in fives. Women in these communities did not handle large sums of money. We found that in general, for Dalit communities which survive on daily wage employment, their calculation limit seemed to be up to Rs 1,000. This was true for both men and women. For the other castes, which are financially better off, we found that most men were comfortable counting up to Rs 10,000. However, women did not seem to go beyond Rs 1,000. When asked at what points they handled money, the women said that they handed wages to agricultural wage-workers in the absence of their husband or sons and this hardly ever exceeded Rs 1,000. But as 'upper-caste' women have less mobility and are not engaged in wage work they seemed less confident and slower than women from other caste groups.

In a Muslim household we were surprised when the husband took much more time to count than the wife. When we asked them how many seeds there were in their hands, the husband said 420, but the wife said, "I don't know, I just counted the seeds in 20s because I only know numbers up to 20. But she had made sets of 20 seeds." Once again women did not seem to know large numbers. In the Muslim community, older women are not able to count as fast as the younger ones who are involved in agriculture as daily wage workers.

In the Kammari caste — who are traditionally blacksmiths, make all farming appliances and are engaged in agricultural work — both men and women are able to count fast.

Strategising in Everyday Life

For certain jobs, such as transplanting of paddy saplings, sugarcane cutting, weeding, etc, workers are paid a daily rate. In this area, men and women get a daily wage of Rs 40 and Rs 25, respectively. An additional amount of Rs 6 per day is paid towards the toddy. Generally, landowners pay the amount meant for toddy daily, and pay the wages weekly.

Sometimes wage-workers take the work on *guttha* — on a contract basis. If they take it on *guttha*, a group of people comes together to share the work and the wages. They try to complete the work in a much shorter period compared to daily-wage work so that they can save some money and time. Here they calculate the number of people required for the work, the time they will need and the amount that they can save. There is a certain logic in deciding on whether they should choose *guttha* or daily wage: If there have been good rains in the season they prefer daily-wage work. On those days they demand a high wage. At other times, as there will be competition for the jobs, they prefer *guttha*, so that they can reduce the amount of work and time and grab whatever job they can get.

Maths is usually associated with calculations. When applied to life these skills become an important tool for strategising.

CONCLUDING OBSERVATIONS

- Many literate people think maths is difficult, but for non-literates, maths is a part of their normal life.
- The level of ability to calculate and count is related to people's occupation and income, since that determines the range of values they need to be familiar with.
- In solving calculation problems, many were simplifying the problem and mostly using addition. People trained in formal maths use place values when calculating and reading numbers — i.e. they go from right to left. Here we found when calculating mentally most people read numbers from left to right. Many do multiplication rather quickly with a method that we could not discern, nor do they have a term for the process. In other words, they are unaware that they are doing multiplication.
- The majority of people depend on oral/mental calculations, whereas the upper-caste people who are literate depend less on oral calculations.
- Power relations were evident in that, irrespective of the 'correctness' of their answers, upper-caste people responded quickly to maths questions, whereas lower-caste people, even when they knew the correct answer, often held back when in the presence of upper-caste people.
- People have their traditional ways of counting and measuring different things. But because of the introduction of the metric and decimal system, they find negotiating between the systems difficult. This is causing them to lose their independence in calculating. For example, for measurements such as land, many are forced to depend on educated people for assistance. In this village, lower-caste or less-educated people depend on upper-caste, educated people.

"In our research we were trying to understand numeracy practices, but it was very difficult to understand their explanations. Till the end we could not figure out how they did multiplication! As far as research methods, is there any other way to try to capture this kind of information?"

FOLLOW-UP SUGGESTIONS

- Explore in greater depth gender-, age- and caste-related differences in numeracy practices.
- Observe people in their different occupations to observe the numeracy tasks being practised.

UNDERSTANDING NUMERACY PRACTICES AROUND WEIGHTS IN TWO NORTH INDIAN VILLAGES

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Researchers and facilitators from Nirantar worked in two villages in Uttar Pradesh, India to ascertain the numeracy practices of women. Through observations and interviews, the traditional and standard weights and measures used by women in their daily interactions, and the complex power dynamics underlining the women's understanding, was documented and analysed.

INTRODUCING THE STUDY

Nirantar, a resource centre for gender and education, has been working in 20 villages in Lalitpur district in Uttar Pradesh, North India, since April 2002. Our work here aims at empowering women and adolescent girls through literacy and education — an education that makes connections with their lived realities and helps them critically reflect on these. The programme, named Sahjani Shiksha Kendra (*Jani* in the local language means women, and *Sahjani*, one who helps women) works primarily with Dalit women and girls. The programme has adopted different literacy and educational strategies to enable them to act against discrimination and tackle local development problems.

Through this small research study we sought to document numeracy practices around measuring weights, both traditional and standard, with a view to using the study findings to rework Nirantar's existing numeracy curriculum and to develop new material.

Research Questions

After several discussions we narrowed the research questions to the following:

- What are women's numeracy practices related to measuring weights? Do issues of gender, caste and class impact the nature of numeracy practices?
- What is the nature of the interface between 'standard' (metric) and 'traditional' measurement systems?

Study Setting

We selected two villages, Badhai ka Kuan and Manikpur. Badhani ka Kuan is a small village with a population of about 500 and is located about 6 km from Mehroni, the nearest small town. Several villagers have close ties with the town. The population is divided among three caste groups — Ahirwars (Dalits or Scheduled Castes), Badhai and Banjaras (these castes fall within 'Other Backward Castes' category). Dalits have the largest number of households, and agriculture is their main source of livelihood. Nirantar's literacy centre has been running in the Dalit *basti* (neighbourhood) for the past two years.

Manikpur is a large multi-caste village, with a population of 1,490. Manikpur, unlike Badhai ka Kuan is difficult to access, as it is both remote and the mud road leading to the village gets washed away every monsoon. The village has no electricity but it does have a school, childcare centre and several handpumps for drinking water. Nirantar began its educational centre here in 2001.

Research Process and Methods

For Nirantar the research process itself was as critical as the research findings. One of our objectives for taking on this research was to involve the local facilitators in the research, both the fieldwork and the analysis. We thus set up a research team (divided into two groups, one for each village), comprising Nirantar members from both Delhi and Lalitpur. We organised an orientation workshop where we introduced the facilitators to some of the key concepts around ethnography, ethnographic research methods and the objectives of the study.

The research was designed as a simultaneous process of doing fieldwork and then collectively reflecting on it. The first three-day field visit aimed at understanding the traditional system of measuring weights and identifying the points of intersection between standard and traditional systems. During the fieldwork we conversed with a number of men and women, sometimes individually and at other times in small groups. We moved with the rhythm of our 'informants'. For example, when one of the women we were talking to said she had to go to the *chakki* (flour mill), we went with her. We looked at a variety of numeracy texts, such as account books and *parchis* (small receipts), and had discussions around these. Each day, after the fieldwork, both groups met and analysed their observations. Gaps in data and new questions were identified for the next day's visit.

The first round of observations yielded rich but slightly fragmented data. For the second round of fieldwork we changed our methodology slightly. We developed semi-structured questionnaires around specific themes such as 'shop literacies' and 'women's understanding of the metric system' around which we had more detailed discussions. We held a final workshop with all the facilitators where we revisited the data and identified emerging patterns.

RESEARCH DATA AND ANALYSIS

Understanding the traditional measurement system

> "It is a complicated and nuanced system. It took us 'outsiders' time to unravel and we kept discovering new things. First we were told, "We measure in *pailis* and *barajjas*". These we learnt were names of containers — measuring containers, to be precise. We asked to see a *paili* and even took a photograph. We were told it measures 10 kg. We thought that this was a 'standard' traditional measure. Then someone else brought her *paili*, which looked different and was made of a different material! She said hers was an '11-kg *paili*'. We understood from the animated conversation that followed that everyone had their own *pailis*, and that *pailis* measured between 9 kg and 11 kg. Just when we thought we had understood the system, a woman said, with a grin on her face (enjoying our confusion): 'It's 10 kg for wheat, but will weigh more for urad!'"
>
> Research Notes

Left: A women holds a *barajja*.
Above: Different kinds of ***pailis***

After considerable discussion with the women we finally established the following:

- There is no 'standard' *paili*. Though *pailis* are containers (and hence measure volume) they are referred to in terms of weight. Smaller 1-kg measuring containers are called *barajjas*. The names of these measures varied across the region.
- The weight depends on what is being measured. Most *pailis* were 10-kg measures

but they could vary between 9 kg and 11 kg. How much a *paili* contains also depends on how it has been filled (i.e. smoothly up to the brim or heaped).

- The traditional system is a personalised system. Every family has its own *paili.* It could be made of brass, which is the most common, but we saw wooden and bamboo ones too. Borrowing and returning of grain must be done using the same container, since each woman 'knows' her *paili* (or *barajja*), its capacity and the way the *paili* was filled at the time of lending.
- *Pailis* and *barajjas* are used extensively in the village for barter exchanges. Sometimes women buy things from the local shop using grain measured with *pailis*. Women may borrow small amounts of grain within the village using *pailis*. Women use this system with confidence. They are familiar with the terms of exchange and they are unabashed about ensuring that they get the correct amount and are not cheated. As we shall see below this was in sharp contrast to their interactions with the standard system.

The Traditional System and Women's Economies

The traditional system of measurement seemed closely linked to women's lives and their economies. *Pailis* are used to measure small amounts predominantly within the village barter economy. Men usually do the large purchases and handle cash. During our discussions men hardly ever mentioned the barter economy. When they did there seemed to be a class bias at work as well. For example, Munnalal, from a well-off family of a 'higher' caste said, "Those who don't have money may be doing this, but we don't."

A granary inside a home from which women take small amounts of grain to buy items of their choice

The discussions around *pailis* led us to women's 'hidden' practices. Interestingly, Munnalal's wife later told us at great length about how she buys things in the market in exchange for small amounts of grain. We heard several accounts of women taking small quantities of grain from the household stock, usually without informing male family members, to buy things of their own choice. Some women said that men know about these practices and don't mind as it is not a large amount and women eventually end up buying things for the family anyway! Others said that very often they take the grain *chori chipke* ('*chori*' means theft and *chipke* means hidden or secretly) as they don't want male family members to know.

Whether women actually bought things for themselves or not was relatively unimportant. These discussions gave us insights into how women carve out tiny spaces in a world where they are certainly not spoilt for choice. Several women told us how they are given two *jodas* (one *joda* being a sari, petticoat and blouse) every year with which they have to manage. Women are not involved in the selection of saris. They are bought by male family members and given to them. What if they didn't like the sari that had been bought? Bhuvan's remark was a typical response, "There is no question of liking or disliking. We usually like everything. Men know what we like. If the sari tears, we stitch it and wait for the next year."

Of course, women knew about these practices but not everyone approved. Sribai from Manikpur said, "Some women steal grain from the house and sell it later in the market. Their husbands have no control over them. Women collect the money and over a period of time buy clothes and even manage to get jewellery made. Most often women use the money to buy things for themselves to eat. They are *chatori* (greedy)."

Discussions like these were centrally around issues of control, resistance and construction of gendered norms. The fact that we were able to analyse gender relations through a numeracy-research study was a novel experience for the research team.

The Market: Traditional/Standard (Metric) Interface

If women use the traditional system so extensively, did they have anything at all to do with the metric system?

All the women we spoke to do encounter the metric system, some more than others depending on their family situation, the work they were doing. Most women switched between traditional and standard measures when shopping — at the village shop, the local weekly village *haat* or the market at the nearest town.

Observations based on examples like the ones that follow enabled us to understand the nature of the interface between traditional and standard systems.

Mithila at the *chakki* or flour mill

We went with Mithila to the *chakki*. On the way she told us, very confidently, that the sack she was carrying contained two *pailis* of wheat and on the scales that would weigh one *pao* (250 gm) more than 20 kg. On reaching the *chakki*, Mithila put the sack on the weighing scale and almost immediately removed it and put it by the side of the wall. All the while the flour-mill owner was at some distance from the scale. Mithila did not wait for him to come over and read the scale nor did she read it. From his position (leaning against the wall) he announced that the grain weighed less than 20 kg. He also deducted one *pao* as is his normal practice (for the amount of flour that gets wasted while grinding), and took the normal grinding charges.

Research Notes

Observing an interaction at a trader's shop in Mehroni town

It was market day in Mehroni. The trader's shop was busy. During the half hour that we were at the shop we observed seven women and five men come and sell grain. It was striking that neither the women nor the men asked the trader how much the grain weighed. Nor did we observe them trying to read the scales. They only asked the prevailing buying price and how much they would get. (Here the assumption would be that they know the exact weight already and can therefore calculate how much they should get.) All the women demanded that the trader give them a couple of rupees more than the amount he mentioned. Only one of the men did the same. The basis on which they were asking for more was not clear. The shopkeeper generally did not give a written *parchi* to the sellers, except to one woman who had brought a substantially large amount of grain to sell. While negotiating with the shopkeeper, this woman said she had brought the grain after weighing it using scales in the village. When we spoke to the woman after the transaction was over, we realised that she had not weighed the grain nor did she know how much the grain weighed. This was her strategy to ensure that she was not cheated. The *parchi* she had been given only had a money amount, not the weight.

Research Notes

Analyses

Power and Market Interaction

What instantly struck us was the contrast in confidence levels between the interactions where women used the traditional system and those where they had to switch between traditional and standard systems. The latter were clearly embedded in various power relations based on gender, caste, class and literacy.

Facing page and above: a researcher observing interaction at a trader's shop

Take the case of Mithila. In her village context she is considered to be a 'bold' woman, as she is outspoken and unconventional (having married out of choice and because she is mobile). Mithila is also familiar with urban life (and hence one assumes standard measures) as she migrates seasonally to the city to work. But Mithila did not question the *chakki* owner even though the amount of grain he said he had measured was less than what she had weighed at home using the traditional system. Perhaps she could not question him because, at the end of the day, Mithila is a non-literate, Dalit daily-wage labourer and the *chakki* owner is an 'upper-caste', literate and urban man. Similarly, most of the men and women in the trader's shop were rural and non-literate and belonged to castes that were 'lower' than that of the shopkeeper.

How aware were women about these power relationships and did they think it impacted the interaction? Mithila did not want to acknowledge that she might have been shortchanged. When we asked her why she hadn't questioned the mill owner she said, "Oh, it is a small amount!" But others acknowledged that, ultimately, the market is an upper-caste male space. During an interaction at the village, Ram Pyari had remarked, "Lower castes have no value in a *mandi*." And Har Dayal, her husband, had added, "Lower castes are cheated more by the buyers in the *mandi*. The grain of lower-caste farmers is auctioned at a lower price. The buyers claim that there is more

The mandi: a male space

kuda karkat in our grain (i.e. the grain is of poorer quality)." The relationship between Dalits and the traders is further complicated, as the latter are also moneylenders. The women's families are invariably indebted to them and are also dependent on them for future loans. The fact that women repeatedly said that they 'trust' the shopkeeper must be read in this context.

The Power of the Standard Measure

Initially observing the women bargain quite animatedly made us think that perhaps they were managing just fine. But after watching several interactions we realised that the interactions were set pieces. Women assume they're going to be cheated (though they all say they have faith in the shopkeeper), and therefore always ask for a few more rupees. Women were never sure how much more they should ask for, as they never knew the exact weight of the grain. Bargaining for a 'little more' allowed them to believe that they have some power.

Women also bargain to mask the fact that they are, in fact, not sure of the metric measures. Though several women said they 'knew' the metric system, it was not clear how much they knew. We never saw anyone looking at or trying to read the scales in the market exchanges, nor did they enquire about the weight. The trader's explanation for this was that women don't need to ask because they can see the weight for themselves, which clearly they do not. But then he later admitted that very few women know the 'smaller' weights (less than 250 gm) or can calculate amounts that are more or less than the main markers (half, quarter and three-quarter kilograms). He also said that most men (approximately eight out of 10, he said) recognise the smaller weights or can calculate the 'in between' weights (for example, 350 or 700 gm). Our own enquiries during village interactions showed that generally women were familiar with the main markers but did not recognise the smaller weights or calculate prices

of these small amounts. However, it was these small amounts that they lost out on. The fact that women did not weigh the grain using standard measures before coming to the market reduced their confidence levels tremendously. The woman who had bluffed the trader and said she had weighed the grain before coming was clearly using her supposed knowledge of the standard to ensure that she was not cheated.

When did women insist on precision? When was rounding-off or approximation acceptable? Were we researchers, trained in formal maths, overly concerned about being 'correct' and 'exact'? While it is difficult to come up with clear answers, we did observe that there were differences in the way in which interactions unfold in different contexts. There was a high degree of precision in the use of traditional measures. As 'outsiders', it was interesting that precision was linked to the traditional system (read imprecise), whereas when it came to the standard system (read precise) women ended up approximating.

> "You won't find a general pattern but you have seen that this kind of interaction is power-laden. The *paili* system works in their small-scale system. The *paili* is not a specific amount, it varies between *pailis* and between types of grains. Yet the women have a specific sense of how many kilograms that *paili* is when filled with a specific type of grain; she is precise about it. But when they go to the market, precision is required but as they cannot calculate and because of power they settle for 'approximate' amounts."

Of Women and Maths

It is natural that one's ability to negotiate and calculate depends on confidence levels, and this again we found was influenced by gender. Throughout the study, in both the village and market contexts, we found that men — even non-literate men — calculated confidently. They hardly ever hesitated when asked a question. Women needed much more time as well as a conducive environment to be able to explain how they were making their calculations. Mithila, for all her bluster, was always nervous about explaining the method she used for her calculations. This was in sharp contrast to Har Dayal, Ram Pyari's husband, who was happy to repeatedly explain his method of calculating interest to us. He and Ram Pyari looked very pleased when we played the tape back to them. Stereotypes about mathematical abilities were deeply entrenched. Men were believed to be good at mental calculations. "My husband can do calculations very well though he is not educated," Uma had said. "The minds of husbands are sharper and work faster. I can't do any calculations. I don't know the weights," claimed Ram Pyari.

Rampyari can't calculate

Was this really the case? On our first day in Manikpur village, Ram Pyari told us that she helped run the small family shop. Though she spends most of the day managing the shop, she sees herself as a helper as she does not go out to buy the stock, which according to her involves big money and big calculations. Of course, we asked her if she recognised weights. What she said appeared to us like a pattern by now — she recognised only the 1 kg and 500 gm weights. Her lack of confidence made her reluctant to calculate: "I am scared. I have also never tried." Her nervousness was exacerbated by her son's constant yelling (which was often, apparently) about her always making mistakes. How, then, did she manage at the shop? She did not sell *khhuli cheezen* — products that were sold 'loose', by weight, such as sugar — as this would require calculations. She said she sold 'whole' items like candies, *gutka*, bidi and matchboxes. On our second visit we again found Ram Pyari managing the shop, and to our surprise we saw her weighing and selling things! So we were left wondering whether Ram Pyari could measure things or not.

Research Notes

How do you assess whether someone knows something or not? Uma had said that she 'knew' the weight measures even though she could not read the numbers of the weights. Ram Pyari had told us that she did not know weights and could not calculate but was seen weighing and selling things when her son and husband were not around. The fact is that women know the traditional system and that this system has no recognition from the mainstream. Were we reinforcing hierarchies by enquiring how far women know the metric system? Yet we realised that 'not knowing' did lead to a lack of confidence and an inability to negotiate and play the system.

'Good Women' Don't Go to Market

Our fieldwork led us to explore women's perceptions about the market as a space. We were surprised when several women categorically denied that they went to the market. We had, in fact, seen several women going to the market fairly regularly. Why the denial?

Women said that going to the market is not an activity that 'good women' engage in. Women who go to the market are 'loose' or out of control. And this reflects badly on the husband (who is obviously not man enough to control his wife) and the family. Several women said that women who do go, go out of *majboori* (out of compulsion) — either they were alone or their husbands were away. Women were uncomfortable when asked directly if they went to the bazaar, as the bazaar is a place where things are on sale. Women linked the word bazaar with being a *bazaaru aurat*: a prostitute.

Women in the marketplace

But we heard some different voices as well. For example, Sribai said that women do go to the market and even named some women. These women, Sitara the facilitator later told us, are 'known' in the village to 'dominate' their husbands. Ironically Sribai also has this reputation, but she has a positive self-image of herself — as someone who manages the household affairs, including selling grain at the market and even taking charge of loan-related transactions.

The women also said that their mobility threatened men's control over public space. "If women go to the market, it will lessen men's value and therefore it is correct that women do not go to the market," declared Mithilesh. Possibly, women recognised how the gendered nature of power dynamics related to women and markets but did not want to explicitly challenge the gendered norm. Hence many women said they did not go to the market when in actual fact they did. Going or not going to the market is also a marker of caste and class status. Generally women from the so-called upper castes have much less mobility than Dalit women. We realised that many of the Dalit women who were speaking out against going to the market were financially better-off and were much keener to articulate and appropriate social practices of the upper castes.

CONCLUDING OBSERVATIONS

The research study showed that the traditional system of measuring weights, using specific measuring containers, is used extensively within the village economy, especially by women. Women used this system confidently. They were particular and precise about their measurements when they used the traditional system and were rarely cheated or afraid of being cheated.

We also found that everyone engaged with both the traditional and standard systems.

It was difficult to generalise about the extent to which women were familiar with the standard system, but we did find that women were largely unfamiliar with weights other than the main markers like one, half, quarter and three-quarter kilograms. This, along with other power dynamics, made women under-confident when using the standard system and were often cheated as a result. With the standard system, women were constantly approximating, unlike when using the traditional system.

The research study showed that everyday numeracy practices, particularly around the interface between traditional and metric measurements, were embedded in power-laden social relationships. Gender, caste, class and literacy become important determinants of how the interactions are played out. As practitioners, this raised for us the question of the extent to which teaching just numeracy skills would enable women to challenge such relationships. An important breakthrough for the research team was the realisation that social and gender justice issues could be interrogated through numeracy. Our research, through unravelling women's hidden economies and practices and perceptions of the market, had enabled us to discuss issues of control, resistance and agency — all critical concerns in gender discourses. Nirantar, as a feminist organisation, has taken on board many of these issues in its education work but not through its work on numeracy.

Teachers as ethnographers

The research findings were revealing but the process of doing the fieldwork and analysis collectively was important in itself. The process of doing the research using ethnographic methods meant inverting power relations at different levels, which was quite liberating and exciting for the research team. As one team member said, "It felt really good to learn from non-literate people about how they calculated. It was putting into practice the mantra of valuing local knowledge. There was a power inversion where 'we' were learning from 'them'. We were forced to calculate mentally, in order to follow their methods of calculation, something that we were not comfortable with, given our dependence on written numeracy." For the facilitators too, it opened new windows. They are always in a position where they are meant to know all the answers and this is quite a heavy load to carry. In this process they were learners and could learn together with others, some of whom were more educated than them. Initially, many of the facilitators were sceptical about whether they would learn anything new as they 'knew' the local context. But gradually they realised they did not know all the details, had not thought of these practices in 'maths' terms, nor had they thought of looking at numeracy as being located within social relations. "We were looking at something familiar through a different lens. Moreover we had not seen this as knowledge worth bringing into the classroom."

> "It was interesting to discover the extent to which literacy and numeracy are embedded in power relationships. It's so determined by context. We looked at how literacy and numeracy are used or not by women in the market — one aspect is not being able to calculate but the other is the power relationships involved in doing it. Being able to speak up if you DO know something is wrong, once you have the knowledge and skills that enable you to know, would be powerful."

Follow-up Suggestions

- Examine numeracy practices around specific areas like village shops, calendars, making and selling of ghee, etc in greater depth.
- Develop material using the information gathered and see how we can incorporate a social-practice approach to numeracy and literacy in our teacher training.

PART III

Designing Material based on Ethnographic Research

The purpose of understanding ethnographic approaches in this project was to be able to develop locally-grounded curricular materials for literacy and numeracy programmes. At the second workshop this expectation was realised. The research undertaken by each organisation had revealed areas to focus on for programme- and materials-development — gaps between standard and traditional measuring systems used by women, people's unique skills in counting and calculation, record-keeping techniques and texts available in homes, and numeracy practices used in indigenous games. However, to develop these into educational material, participants needed to be familiar with a social-practices approach to learning, curriculum development and classroom practices. Once that was done, participants began developing outlines for teaching-learning modules. Part III describes this process of converting research findings into teaching-learning module outlines.

CHAPTER IV

Ethnography, Learning and Curriculum Design

In the second workshop concepts around learning, curriculum frameworks and classroom practices from an ethnographic perspective as well differences between autonomous and social-practice models were discussed The content of these sessions and the discussions are described in Chapter IV.

ETHNOGRAPHY AND LEARNING

The principle of starting from and building on what people know requires a different approach to education and learning in general. This naturally would mean looking at designing curriculum differently as well. Participants discussed this after reading two short papers prepared for the workshop by Alan Rogers, where he divided the learning of human beings into three categories or types: Learning 1, Learning 2 and Learning 3.

Learning 1 (L1) could be called *incidental* learning. It is learning that occurs naturally and subconsciously. It is the type of learning that occurs when we learn language as children, or where we learn unconsciously through experience or when we 'pick up things' naturally from the environment. The defining characteristic is that we are not aware of having learned at the time. Every human being undergoes Learning 1, as it is what enables us to learn what we need in order to survive.

Learning 2 (L2) is a *conscious* learning. It occurs when someone makes a decision to learn something, driven by need or by interest. For example, when adults decide to learn a new language they are driving and directing their own learning. They take the initiative to learn by practising or exploring from another person or a book or a situation.

Learning 3 (L3) is also conscious learning, except that now learning is *directed* by someone else. This is what we often call 'formal education', where there is a teacher and a curriculum and a syllabus decided by someone else. The learner is not directing his/her own learning; the learning is externally directed.

While all human beings have undergone L1, and many have undertaken L2, not everyone has undertaken L3, formal schooling. And yet, L3 is very often the only type of learning that is considered valid. And so the learning of someone who has not gone to school is discounted, because what they have learned in life is not considered important and is not in the curriculum, which is decided by someone else.

> "Since L3 is often perceived as the only source of learning, when we help the learners become aware of what they know and have learned unconsciously (L1), that also helps build their confidence and validates their own knowledge."

Most teaching and learning programmes are in the L3 realm. And yet ideally we should be taking into account what learners already know (L1) and what they want to know (L2). This is where ethnography comes in. Ethnographic research is a way to discover what people have learned unconsciously. The awareness gained from ethnographic research can help us design an L3 programme that is purposeful and linked to learners' lives by connecting with the learners' L1 knowledge and with their own interests and drives, or L2. Ethnography helps the researcher actually *know* how people might be able to make links between L1, L2 and L3.

Learning 1 is unconscious learning from childhood to adulthood through experience.
Learning 2 means the learner has an interest which plays a role and the learning is self-directed.
Learning 3 means learning things that are determined by someone else.

Discussions at the Workshop

The papers stimulated animated discussions as participants tried to make connections with their own work and contexts. Some of the issues discussed were:

Defining Formal, Informal and Non-Formal

The terms formal, informal and non-formal were referred to several times in the paper as well as in the discussions. These terms have a history and meaning in the literature on adult education and can take on different meanings in different contexts. In fact some participants commented that they used these terms differently in their own work. In the handouts, formal is defined in terms of being an L3 scenario, where learning is under the control of an external force such as a teacher. Non-formal learning is associated with L2, where the learning is under the learner's control but shared with a teacher. And informal learning is L1, where learning is unconscious but comes solely from the learner's individual experiences. Some participants were of the opinion that such neat categorisations were not possible or even necessary. Some also commented that one should be careful not to project a view that non-formal education programmes do not require any structure or curriculum.

> "Formal doesn't mean totally controlled and informal doesn't mean totally flexible. So instead of strict categories, it may be more helpful to list desirables in the learning process such as participatory, democratic, etc."

Control, Power and Structure

Participants also analysed the different learning scenarios in terms of power relations. With L3 power seems to be in one place (with the teacher), and with L1 power seems to be again in one place (with the learner), and in L2 it is shared. Participants felt that in reality the situation is not that simple as the learner has power in an L3 situation too. In the context of adult-literacy programmes, learners regularly exercise power — for instance, by dropping out or not attending classes. Moreover, learners often want the L3 experience and will often push for it.

On the other hand, without an awareness of where power lies, teaching and learning can become very teacher power-based. With numeracy teaching this recognition is very important, since most people think numeracy is about teaching techniques. Evaluation and assessment are also power-laden and it is important to think of new methods of evaluation if one is to think of shifting power. Eventually, if the evaluation system does not also follow such a perspective, having a participatory learning process will not help. It was also pointed out that when talking about a learning situation, it is not useful to consider only teachers and learners. Curriculum-developers, supervisors, trainers, etc are also integral to the process and are embedded in socially hierarchical relationships and structures, which have a bearing on the teaching-learning process.

Curriculum Design based on L1, L2 and L3

Participants communicated that the literacy and numeracy programmes that they have been involved with would be considered L3, with the content and approach being largely determined by someone else. In many of the programmes, learners' experiences have complemented the learning and the materials, but had not been taken to a deeper level of not just supplementing, but basing curricula on people's experiences.

> "The point of our research was to uncover L1 or what the learners have learned unconsciously. And now we are trying to use this to design L3 that is purposeful and linked to their lives. Thus, to make learning meaningful, the material developer needs to know learners' everyday practices in great depth."

However, it was felt that curricula should not be based only on local understandings and beliefs. It required a certain degree of structure and direction from the outside as well. This was felt necessary as programmes function within larger iniquitous social structures, which influence classroom interactions: It was pointed out that in India, in a mixed class with 'lower-' and 'higher-'caste learners, if the facilitator (who would very likely belong to a 'higher caste') is not *directed* to question caste relations, one could end up reinforcing the status quo. The same issue would apply to gender relations. The need to challenge discrimination or oppressive structures would not come either from the learners or the facilitator.

> "In formal education, externally-imposed curriculum standards that address discrimination and are rights-based can be used to ensure equity in the classroom. Such standards may not be in place in informal education settings. So we cannot just privilege the 'traditional'. "

NUMERACY CURRICULA: COMPARING AUTONOMOUS & SOCIAL-PRACTICE APPROACHES

The learning categories being discussed can be linked to understanding the autonomous and social-practice models of numeracy and literacy discussed at the first workshop. A curriculum or programme based on an autonomous model — where skills are seen as autonomous sets of knowledge to be imparted from one person to another — is a prime example of L3. But a curriculum that takes a social-practice approach, taking into account what people already do and already know, naturally includes L1 and L2.

Participants compared characteristics of numeracy curricula based on an autonomous model with those based on a social-practice model. Though the focus was on numeracy the same process and concerns would apply to a literacy curriculum as well. The distinctions between the two models include both the source and rationale for including particular content as well as the nature of the content itself. While the content of a numeracy curriculum is often assumed to be a fixed and accepted set of concepts,

including counting, operations, measurement and geometry, in a social-practice curriculum, very different aspects of a content area, such as measurement, might be included. Decisions about what content to include in a social-practice curriculum are determined by events and practices learners are engaged in instead of including what is typically and formally defined as 'important' or 'necessary' or is even simply 'a tradition', carried on by those who have passed through the formal education system.

The case studies undertaken by the participants in this workshop revealed some sophisticated methods of calculation and problem-solving used by supposedly 'innumerate' people. They are not innumerate at all — they simply don't use the formal techniques that many of us learned in school. And thus the ethnographer/curriculum-developer must be aware of the fact that adult learners of numeracy have a variety of 'funds of knowledge' that impact upon and feed into their learning of maths, such as these listed below:

- Adults have mathematical knowledge and practices that they have learned from sources other than formal schooling.
- They have identities and images of themselves that relate to their attitudes towards maths, whether they feel highly confident or very unsure of their abilities.
- People have relationships to learning, to teachers and to maths itself that come from past experiences with maths and/or education.
- Everyone has involvement with numeracy practices beyond the classroom.

> "The role of the ethnographer/programme-developer is to identify and recognise these funds of knowledge within the learners, and then build on them in the teaching and learning process. This way they can become more culturally, socially and economically sensitive to their learners."

An Autonomous Model: General Qualities of a Numeracy Curriculum
- Content is abstract, without explicit context
- Focus is on solving given problems using a given procedure
- Only one correct answer is generally allowed
- Content is treated as being neutral and culture-free
- Focus is purely on content

A Social-Practices Model: General Qualities of a Numeracy Curriculum
- Content is embedded in practices and events
- More than one answer is accepted, depending on the situation
- Incorporates issues of culture, power and values
- Focus is on process as well as content
- Puzzles and games are utilised

Comparison of Numeracy Curricula Content

NUMERACY TOPICS	IN AN AUTONOMOUS MODEL CURRICULUM	IN A SOCIAL-PRACTICE MODEL CURRICULUM
NUMBER COUNTING OPERATIONS, FRACTIONS	• Counting and calculating with no explicit context. Decontextualised and abstract problems given • Specific methods for solving to be memorised, with little focus on understanding	• Counting and calculating based in real purpose • Learners encouraged to use methods that they understand when calculating • Links with standard methods made based on individual methods used by learners
MEASUREMENT OF WEIGHT, DISTANCE, VOLUME, TIME, ETC	• Only exact measurements considered correct • Units specified and standardised • Calculations based on abstract formulae • Use of only one calendar	• Making links between standard and traditional measurement units • Approximate measurements also accepted based on situations • Use of local and religious calendars
SHAPE AND SPACE (GEOMETRY)	• Focus on two-dimensional shapes • Focus on names, vocabulary	• Explores aspects of building and designing in real contexts • Involves real places and shapes
DATA HANDLING: GATHERING AND REPRESENTING	• Decontextualised graph- and table-reading skills practised with little application	• Local, relevant data recorded to provide real experience • Data represented meaningfully for planning and analysis

APPLYING A SOCIAL PRACTICE FRAMEWORK

Drawing on the research studies and discussions around the framework above, participants brainstormed in small groups on possible content areas to be included when determining a curriculum from a social-practice perspective. One group worked on how the topic 'Recognising, Counting and Writing of Numbers' could be visualised using a social-practices approach in the following way.

In a number of the studies participants found that women referred to numbers in different ways, like '60 and 8' instead of 68. In such cases the *number names* can be introduced to learners by building on what they already understand.

- Some of the research studies had revealed that the scripts of both English and local

language numerals are used in the local environment. However, most programmes teach one or the other. It was suggested that both scripts could be introduced, making sure to stay with what is most commonly used in the local environment.

- Most adults were familiar with currency notes and coins. These should be used as the starting point to teach number recognition.
- Many of the research studies had documented indigenous methods of record keeping and counting — tally numbers, cowdung dots, knots, markings on the walls, etc. Again these should be used to understand what numbers they already know or recognise.
- People seemed to have their own counting systems. Like counting in 5s, 10s or 20s. These should be used to introduce number names, place values etc.

Discussions at the Workshop: Excerpts

Even this small exercise made participants realise how difficult it would be to evolve a full-fledged curriculum. Among the things that participants grappled with were:

Determining the starting point Should they identify a topic, as they did in the example, and then bring in the local uses? Or should they begin with the practice and then move to concepts and skills?

> "Do we include those things that we think are important, like averages, and then search and see where averages are in their lives and teach from that perspective? Or do we look at their lives and use that as the basis, and develop from what goes on in their lives?"

Reinforcing a functional view of learning They were also concerned that a social-practice approach may end up taking a very functional and utilitarian view of learning.

> "We have to be careful not to put a ceiling on a curriculum by basing it only on what is being used locally. Topics like map-reading, for instance, which don't seem so 'necessary' or 'relevant' would get left out. Looking at it from a social-practice perspective, we would ask the question — why is map-reading important for rural women? Because they enjoy learning such things? They know directions but can't read a map so we want to give them a new skill? The rationale needs to be clear."

METHODOLOGIES: CHARACTERISTICS OF AUTONOMOUS & SOCIAL-PRACTICE CLASSROOMS

Participants considered the following comparative table:

ASPECTS OF TEACHING AND LEARNING	CHARACTERISTICS OF TEACHING AND LEARNING USING AN AUTONOMOUS MODEL	CHARACTERISTICS OF TEACHING AND LEARNING USING A SOCIAL- PRACTICE MODEL
SOURCES OF IDEAS FOR TEACHING AND LEARNING	Teaching ideas come from given curriculum and content, and from teacher. Learners not involved in sharing ideas	Instructional ideas gleaned from learners' issues, interests, lives, based on events and practices in environment. Listening to learners
FUNDS OF KNOWLEDGE OF THE LEARNERS	Learners' knowledge suppressed, ignored or denied	Previous learning of learners explored, valued, built upon
CONTEXT	Learning usually abstract and decontextualised	Learning sited and embedded in real contexts. Learning experiential and based on real experiences
ASSESSMENT	External assessment (exam graded by teacher) determines success or failure. Correctness of answers main criteria. Focus on competition	Assessment can be mix of peer- and self-evaluation, and objective criteria. Criteria can be on progress, rather than correctness and success/ failure. More focus on cooperation than on competition
CONTROL AND ROLES TAKEN	Teacher determines curriculum and how classroom is run. Teacher as instructor	Learners have roles in teaching-learning process, cooperation among teacher and learners, more negotiated learning situation
MODE	Most work done in written mode	Oral, mental, written modes used
ROLES OF CULTURE AND SOCIAL RELATIONS	Role of culture mostly ignored. Dominant culture assumed in the classroom (usually teacher's culture). Dominant culture often 'invisible', taken for granted	Learners bring in own aspects of culture (BUT must ensure no one culture becomes 'privileged'; must challenge and critique cultural practices and experiences)
BUILDING NEW CONCEPTS	New concepts decontextualised and given in top-down manner from teacher to learners	New concepts contextualised. Learning shared, experiential and process-oriented
CRITICAL THINKING	Learners subtly expected to be compliant, following teacher's instructions and matching his/her thoughts	Learners encouraged to challenge, think for themselves

Participants discussed the fact that besides differences in curriculum content, the approaches and attitudes in a social practice model-based classroom are crucially different from an autonomous model-based classroom. The social-practice classroom would work to include L1 and L2 when linking with L3, whereas the autonomous classroom works solely on an L3 scenario, with skills and information being imparted from teachers to learners. An L3 classroom would ignore L1 and to a large extent L2. It would devalue these forms of learning or even deny the existence of local knowledge systems — therefore, L3 would not just be ineffective, but can actually be harmful.

> "When you think of the 'what' and 'how' separately you run the danger of coming up with a decontextualised list."

The differences in approaches are also played out in terms of power and control, negotiation in the classroom between the teacher and the learners, and the space given to learners to be involved in determining their own learning. An example from the Nepal case study was recalled where in the training sessions on learning to measure a seed-bed, the trainer had insisted on using a measuring tape when trainees were more familiar with local measuring systems (which, incidentally, the trainer was also familiar with). The person who decides the dimensions of a seed-bed that are to be included in the curriculum has a certain power; the trainer who teaches the 'correct' standard measurement system has power; finally, the trainees don't have much power in the classroom (though they have the power to reject by not learning). A classroom based on a social-practice approach would have encouraged the trainees to bring in their own measurement methods. This discussion brought out the dilemmas and difficulties facing programmes where learners are trying to transition to a formal system (often referred to as 'bridging programmes'). In such situations programmes are compelled to teach the formal school curriculum, and that in a very short stretch of time. Participants wondered whether it would be possible to rework the curriculum from a social-practice perspective.

> "If one leaves out some of the 'formal maths' topics (like all the operations around fractions) that are not socially needed there would be a problem. What one could do is begin fractions like half kilo, one-and-a-half kilos, mixed fractions, etc that are used in real life and then move onto the more 'technical' things like conversion of mixed to improper fractions."

Participants agreed that some general qualities of a social-practice curriculum and classroom could be identified. Each programme could then develop curriculum specifics based on insights gained from ethnographic research in its particular context.

For example, some of the case studies undertaken by the participants of this workshop revealed gaps between traditional methods and units of measurement used by village women and the standard metric system of measurement used by shopkeepers. This gap was a source of frustration and confusion for the women, and provided shopkeepers the potential opportunity to cheat. Having now discovered this gap and need, the programme developers can address the issue in their programme and attempt to help the women make the leap from what they already know to using the new knowledge that will link them more solidly to standard commercial practices. They do not need to give up their own local numeracy practices, but simply add a new set to the repertoire, as we add new languages and dialects, and new literacies.

> "This is the role of curriculum- and programme-development: to provide materials and programmes that are appropriate for the specific social numeracy and literacy practices relevant to the learners."

CHAPTER V

Designing New Materials Using the Research Results

In the chapter that follows, the newly designed research-based module outlines of two organisations are presented as illustrative examples of the process of converting research findings into teaching-learning material. Reports of the research studies on which these modules are based can be found in Part II of this report.

GETTING STARTED

The next step for the participants was to use the information and insights they had gained from their research as well as from workshop sessions, to begin designing outlines for developing new materials. A format for writing the outlines was suggested as a guideline, and the participants in groups designed modules addressing particular concepts or areas of focus that had come up in their research. Some groups began designing new modules from scratch, while others chose to adapt and revise existing teaching-learning materials and activities using an ethnographic approach.

A Proposed Structure for Developing Modules

Rationale A needs statement that maps learners' and teachers' numeracy practices and funds of knowledge for numeracy.
Goals and intended outcomes Jointly identified concepts and skills within practices to be learned.
Outline of module, sessions and activities Outlines of sessions, brief description of strategies and activities, timings, resources, materials, etc.
Strategies for teaching and learning concepts and skills within practices and events, taking account of social-practice guidelines.
Evaluation of processes and outcomes and next steps within social-practice guidelines.

Each organisation presented preliminary outlines of their modules to the large group. Feedback was again given to the presenters who were then encouraged to incorporate the feedback and continue the work once they returned to their organisations.

Module outlines developed by the different organisations:

- Learning numbers, addition and subtraction through games (Plan Bangladesh)
- Buying and selling at the market or village shop: traditional and standard measures (Nirantar)
- Reading the ration card [a booklet recording purchase of grain and other essential commodities available through the government-run public distribution system] (Nirantar)
- Reading calendars (Laya)
- Recognising numbers, building on existing practices (BGVS, Rajasthan)
- Counting and number-recognition based on local practices (Mahila Samakhya)
- Traditional and standard measurements (World Education, Nepal)

Outlines of two modules and the discussions that ensued are presented below:

ILLUSTRATIVE EXAMPLES OF MODULE OUTLINES:

Example 1: Measuring Length and Distance: Traditional and Standard (Metric) Systems (World Education, Nepal)

Rationale (based on research outcomes) The research study revealed that despite having studied the lessons on standard measurements of distance/length and weight/capacity in the GATE (Girls' Access to Education) and SEEP (Self-Employment Education programme) curriculum, the participants of the SEEP programme had not understood the lessons and hence the metric system. In their daily lives they used the traditional measurement systems with which they were familiar and sometimes referred to them in the class. Yet they did encounter the standard or metric system and felt the need to understand it.

Goals and Intended Outcomes:

- To help the participants of the SEEP programme feel comfortable with and confident of using both systems of measurement — the formally-taught standard system and the informally-learned traditional systems.
- To enable the participants to understand how the different measurement units in the two systems compare and relate with one another, which would allow them to 'switch' comfortably between the two.
- To rework the lessons in the SEEP curriculum using an ethnographic perspective.

Outline of Sessions The session had been planned for two SEEP classes (for approximately 4 hours)

Session 1 Understanding how girls measure length and distance in their daily lives

Activity Through discussion, map how the girls measure distances and lengths in their daily lives in the village context. And explore the girls' familiarity with standard measures and contexts in which they use them.

Session 2 Establishing the need for standard measures and introducing learners to standard measures

Activity Tailoring clothes

- Participants will bring in pieces of cloth and tailored clothes to the class.
- They will be asked to measure these first using traditional measurement units. The exercise will reveal variations in measurements. After this they will be given the measuring tape and asked to measure again. They will be helped to measure and use the measuring tape.
- As a consolidation exercise they will be asked to take actual measurements of each other, as a tailor would.

Session 3 Estimating distances

Activity 'Experience walking a kilometre'

- Learners will be asked to walk a kilometre, from one highway marker to another on a nearby road/highway.
- They will then be asked to estimate the distance from class to their homes, between their homes, and so on. It is possible that they will mention the distance in traditional measures or a mixture of both.
- The link between kilometres and metres (from the previous activity) will be established.

Possible evaluation methods

Self-assessment through periodic discussions. Questions such as 'Do they understand all the measurement units and how the two types of measurement (traditional and standard) relate to each other?' Or, 'Can they convert between the two?' will be asked

Application: A good assessment method would be to see whether they were using these skills at all in their daily lives, and if they were indeed using it then whether they were doing so with greater confidence.

Comments from the workshop participants

Making connections One set of comments was around the need to make connections at different levels stronger: to ensure that classroom activities moved into real life situations, to provide enough examples so that learners realise that the same measures can be used in different contexts. For example, the unit 'metre' can be used to measure cloth as well as vegetable-beds.

> "Your case study shows that the girls are familiar with standard measures when measuring fabrics. But they are not making the connection between the metre in the fabric shop and the metre when measuring a vegetable-bed. We have to help them make that connection."

Learning should be enjoyable People learn a lot when they are doing things they enjoy, so it was pointed out that the enjoyment element in activities should not be compromised. Many participants felt that the activity where learners have to take measurements of each others' clothes would be a lot of fun.

> " It's nice to do something different sometimes. It can become very boring if we link all our activities and learning to life all the time."

However, the two sessions seemed similar and they could think of adding different types of activities. Participants felt that learners should be given more practice in actually using the measuring tape, and that literacy/numeracy activities around this could be developed.

> "In designing these materials, we had to think back to what our objectives were in teaching these things. Not just what would be taught but also how that would be carried out. Even though there was conceptual clarity, to translate these ideas into activities was not easy."

Teaching the metric system Participants felt that the mapping exercise was good as it would validate existing skills and at the same time could be referred to when introducing new skills. It was suggested that more time would have to be spent on teaching the metric system and explaining its basis. When using a social-practice approach one would still have to teach and introduce new concepts, but how one does it and the rationale for doing it make the difference. Also a decision would need to be made on issues such as accuracy: How accurately would we want them to measure?

> "How accurately do you want them to convert, or how often or for what purpose? A rough conversion can be used as a bridge between the standard and traditional systems with which they are familiar."

Example 2:
Recognising and Writing Numbers
(BGVS, Rajasthan)

Rationale (based on the research outcomes)
The research was conducted among women engaged in a range of home-based activities like stitching, embroidery, tie and die etc. According to the research, women knew numbers up to 30 and counted in 10s only orally. They did mental calculations but could not write. Women had indigenous ways of keeping records. They maintained diaries which were filled in by literate people.

Goals and intended outcomes
- Learners will be able to recognise and learn numbers (up to 1,000).
- Learners will be able to write numbers (up to 100).
- Learners will be able to accurately keep diaries about how many items they have prepared, etc and thus not get cheated by the contractors.

Outline of sessions and strategies
The module has been planned for 16 hours over one month (approximately, two days a week for two hours per day, and some 'homework' exercises, which would be in the form of applying what has been learnt).

Session 1 All the women had calendars in their homes, so we will use calendars to familiarise them with numbers up to 30. Several different activities will be planned for this.

Session 2 As a next step we will extend this to a number square up to 100 and teach women to recognise numbers from 1 to 100 and know the names up to 100. As they count in 10s, we will base the counting exercises on this. And we will begin with the number names that they know.

Session 3 Reinforce counting in tasks that they are engaged in, for example counting the knots they have tied in the *bandhej* work, or the stitches in their embroidery work.

Session 4 Women are paid poorly for the work they do and are regularly cheated.
"They get Rs 17 to embroider one sari. This is sold in the market for Rs 1,400. And it takes them a minimum of a day to do the embroidery. That is how much they are exploited."

We will discuss issues of exploitation with them and possibilities of challenging this. The discussion will include how having numeracy skills would help.

Assessment
Again, the suggested assessment method was to look at application. The test will be if they can read their diaries, if they start keeping records, use the calendar to mark payments etc, and eventually if they don't get cheated.

Comments from workshop participants
Participants were unclear about the objective of having women recognise numbers up to 1000 and write up to 100. The rationale for this was not explicit. They suggested that this decision of up to how many numbers women should learn should be based on the numbers that women deal with and need to know in their work. This could at least be a starting point.

> "Once they understand the logic of place value system, for which one must explore local ways of counting and calculating, they will be able read and write large numbers. They already count in 10s, which makes it easier."

Move Beyond the Immediate
While appreciating the fact that the activities were rooted in women's lives, participants felt that this should be used as a springboard and a regular reference point but should not be limited to that alone.

> "All the activities are rooted in the women's daily use of numeracy such as the counting of knots or recording of saris. This might get very boring. The possibility of building on this to introduce other activities should be explored."

Numeracy and Social Justice
One of the most exciting aspects of the module outline was the inclusion of social-justice issues. This aspect could be developed further for example by tracing the entire production chain, discussing the value of women's work, and actually doing a costing exercise. The group shared ideas about developing new marketing strategies with the women, teaching the women how the market works and thus aiming to stop the exploitation of women who work many hours for little money.

> "Women rationalise this work by saying they do it in their free time, they don't have to go out the house, this is earn extra money for the family. This can become the basis of a lot of discussion."

CONCLUDING OBSERVATIONS

The most exciting aspect of this process was seeing how research could be used practically and concretely to feed into material development, as research findings are rarely applied. What was particularly revealing was that though none of the research projects were large scale, they had thrown up ideas for developing several modules.

One challenge, however, of adopting such an approach to materials-development is the question of how to design materials for a large number of learners or a wide range of environments. It may be simple to design materials that are relevant for a particular village, but this is time-consuming, resource-intensive and not viable for large-scale programmes. How can a social practice-based curriculum and materials be scaled up to be more widely useable? Can a social-practice curriculum be generalised? Participants felt that an effective option would be to train local facilitators as ethnographers so that they could be in a position to adapt and change material, or to develop material around guidelines that can be developed for a larger number of learners.

ISSUES DEBATED, INSIGHTS GAINED

> "We have now understood a different approach to doing literacy and numeracy work. I think it's going to impact our work in a significant way."

The participants of this project were seasoned development workers and literacy practitioners. The workshop room echoed with decades of their cumulative years of experience of working with marginalised communities and implementing literacy and empowerment programmes in diverse settings. And yet the ethnographic perspectives on numeracy and literacy that were shared in the two workshops were new and engaging for everyone. The discussions were stimulating and challenging, as participants reflected on and shared their experiences and views quite candidly.

Over the two workshops, seemingly disparate discussions began to crystallise into particular themes. These revolved around practical curriculum and pedagogical issues, issues related to power relationships, and ethnographic research methods. Through the voices of the participants presented below are glimpses of the insights gained from the discussions and research studies; snapshots of frequently debated issues and lessons that participants took back with them.

CURRICULUM, MATERIALS AND TEACHING-LEARNING

> "We have talked about how to change our approach and about new ways of developing material. But actually writing them into exercises and pedagogies that can be used — that is the challenge that still faces us after this workshop."

Since using ethnography to design more effective literacy and numeracy programmes was the focus of the workshops, concrete concerns related to curriculum- and material-development, teaching-learning processes, and programme design and implementation dominated the discussions throughout the project.

Using Research Results to Design Curricula and Materials

What came through strongly were the various possibilities of using the observations and analyses from the studies to determine particular areas of focus for programme and material development. A number of curriculum topics emerged as rich and relevant conceptual areas to be developed. We read about some of these in Part III of this publication. Research also highlighted the need to pay attention to small and seemingly less critical aspects that could actually have a large impact on the application of literacy and numeracy in the lives of learners and the programmes' effectiveness.

For instance, the Nirantar team from India found that if one only looked, a variety of texts could be found in rural contexts. But they also realised that simply including local texts in the teaching-learning programme would not go far enough. They observed:

> "Our programme could include reading wall-writing as part of the curriculum. But to make it effective, this would necessitate enabling women to deal with issues of mobility and accessing the public domain even before we can get to the actual act of coding and decoding what is written."

As practitioners the idea of doing research that could be applied was appealing and something that participants felt could be carried forward.

Acknowledging Funds of Knowledge

Over the course of the project, a set of core ideas around curriculum-development using an ethnographic perspective began to emerge. The most fundamental was the principle of understanding the literacy and numeracy practices that people are already engaged in, embodied in the concept of the 'funds of knowledge' of the learners. This approach first sounded familiar to the participants but once they actually applied the concepts they found that it opened up the possibility of seeing things in new ways and doing things that one may already be doing but differently. As some participants said:

> "It's not that we haven't taken people's experiences into account when developing curricula and materials. But it is not fundamentally based on their experiences. Local experiences are like seasoning, added later."

> "I now know that I have to be ready at all times as I might find the insights when I least expect it. I have to be listening continuously. When doing this kind of research I had to try and move out of *didi* (big sister) mode. This was quite complex for the teachers and us. "

In terms of material- and curriculum-development, this research project had shown that three basic steps need to be followed: first, acknowledging that learners have vast knowledge resources of their own and helping them recognise this; understanding these in greater depth (ethnographic research is a good way to do so); and finally developing the curriculum, material and teaching-learning interactions based on this understanding.

The Importance of Context

The recognition that literacy and numeracy were social practices always embedded in a context and not a set of autonomous skills was reinforced by each study. The studies showed that adults are engaged in literacy and numeracy activities for a purpose — to measure, buy and sell, in their work, or simply for fun. But people themselves were unaware that they were doing maths when engaged in such activities.

The study undertaken by Plan Bangladesh, for instance, documented several indigenous games which when analysed revealed a wealth of numeracy practices:

> "Almost all the games required numerical skills. It was interesting to discover that the people playing the games did not recognise these skills as 'valuable' or 'authentic' mathematical knowledge."

What the studies also showed was that such practices were not being brought into the classes or the curriculum as effectively as they could have been. The research study of World Education, Nepal, which observed the interface between traditional and standard systems of measuring in a skills-training session, highlighted that the trainees were unable to relate what they knew already from experience to what was being taught in the class:

> "What is being taught in class is not being learned by the girls and they resort to what they have learned at home. This is what we must understand and incorporate into our programme. This may also help us understand why people sometimes do not use a new method that they are taught."

The implications identified for programme design: enable learners to make connections between previous knowledge and new skills and information; allow experiential knowledge to flow into the sessions; enable learners to use this knowledge in real-life situations. The module outlined in the previous sections tried to put this in practice.

From the Particular to the General

In keeping with the understanding that numeracy and literacy could not be perceived as a fixed set of skills, the research studies revealed a variety of problem-solving, counting, calculating and measuring techniques practised by people but also underscored the fact that to enhance people's numeracy skills and expand their range of abilities, certain formal, autonomous skills would need to be shared with learners.

But participants felt that putting this into practice would not be easy. The following excerpt of a workshop discussion reflects some of their concerns:

> "How are we going to be able to work with the individual methods of each learner? You need to explain it in one way in a class."
>
> "But why? We each do things differently, even those who have learned the formal way."
>
> "It's a practical problem. Just talking to 10 people when we did our research was an overwhelming process. Incorporating 10 different ways of doing something into a teaching process will be quite difficult for the facilitators."
>
> "We should avoid imposing one way. We should understand where our learners are coming from and that we each do things a different way. Our job is to help the facilitator feel more comfortable with that approach."
>
> "What's wrong with the way they're doing it? Why define a particular model as the right, autonomous way if the way they are doing it already works for them?"
>
> "But we have seen that these ways do not work in all situations. Not knowing the standard way puts them at a disadvantage, so isn't that why we have to introduce a more autonomous model?"
>
> "We must remember that the learner is not passive and the teacher does not have to teach every single situation or context. The learner too has to take responsibility for her learning."

The question of how to make the instructional transition from the learners' informal, individual methods to more formal, autonomous methods while maintaining a social-practice perspective was of pressing concern. Possible ways forward were discussed. For example, to first identify the purpose for which the learner wanted the numeracy and to juxtapose that with what they already knew. Taking the BGVS, Rajasthan case study, if the women wanted to be able to read and maintain their diaries (where they recorded their embroidery work) one would have to begin with a detailed analysis of the diary entries; observing the practices of people making the entries; identifying common processes; and then evolving some methods. Similarly, decomposing numbers into smaller components was clearly a common method that all the researchers observed. Even though people did calculations differently the process was similar. Yet this process was not reflected in the curriculum. A common understanding gleaned from all the examples could be developed, which could offer a place to begin.

Participants were also unsure about how materials developed on very localised insights would be relevant across a number of villages. Issues like how culturally-specific the material could be came up for discussion. In the Nirantar case study, calendars were found in several homes. This was interesting to document as part of the research but would be challenging to convert into material:

> "On the basis of our study we can say that calendars should be used in the curriculum. But we studied only Hindu households. The Muslim calendar is different from Hindu calendars. Though both are based on the lunar calendar, the images are different, the holidays marked are different and so on. So there are culturally-specific details that one would have to consider if we want to develop the material widely. Do we do more research to understand other contexts? Do we simply include this information from other sources? The programme would have to take decisions on such issues."

Moving Beyond the Immediate

Throughout the workshop deliberations participants expressed concern that focussing on the local would lead to overloading the curriculum with utilitarian information. Learners could easily become bored if activities only revolved around concrete aspects of their lives, such as counting knots or measuring grain. They debated whether programmes should include experiences that can broaden the perspectives of the learners and may even simply be fun, or whether programmes should stick to the principle of activities being useful and familiar. Participants explored questions such as 'Are maths games or puzzles 'relevant'?' and 'What happens to topics that are not articulated as a need?' The excerpt below shows how some of these discussions went:

> "It seems there is a danger in limiting ourselves to a utilitarian and narrow approach to learning, if we only teach-learn what can be used or what exists in the local environment."
>
> "Is the learner always able to articulate what she wants/needs to learn? What about particular concepts or skills that we think learners should have?"
>
> "There is quite a bit of danger in us deciding what is needed or what is important. There is probably a bit of guidance required but to say, 'This is what you need to learn and we're going to teach it' is problematic."
>
> "How can the learners know, if they have had so little exposure?"
>
> "This is where the guidance comes in, and slowly expands their exposure. For example, a topic like bar charts is so unused; I would say teach it when it becomes relevant (and one can create avenues for this), not just automatically or in a vacuum. Games are full of concepts and resources that are both utilitarian and relevant."

As organisations working for social change, the issue of whether focussing only on the local would lead to reinforcing the status quo was an area of concern. Participants shared several examples of local practices which were discriminatory and regressive. Therefore they constantly argued the need for outside intervention to create spaces for discussions that challenge existing hierarchies and lead to a transformation of social relations. Many felt that one could begin with the local but not remain there. The question of whether ethnography and transformative education were compatible, or the extent to which they are, was raised continuously through the workshop process.

Formal and Informal

Another recurrent theme was the differences and intersections between the formal and informal learning, methods and curriculum. Some research studies pointed to the fact that adults were not interested in formal practices such as learning multiplication tables. Many people could calculate mentally, but could not perform the same calculations on paper or name the process. This led to the participants speculating about why a strong emphasis is laid on people learning formal methods (even in literacy programmes) if their indigenous methods were working for them. But some of the studies, such as the Nirantar study about practices related to measuring weights, clearly showed that people in fact regularly interacted with formal structures where not having formal knowledge or knowing standard procedures was a distinct disadvantage. Participants were also acutely aware that many of the learners who attend their programmes do so to access the formal system. So when they come to a class they may even demand to be taught along the lines of the formal system.

There were discussions around the meanings of different terms like 'formal', 'non-formal' or 'informal'. Following the World Education, Nepal research presentation, for instance, participants discussed definitions of formal and informal maths practices, since some of the girls had 'formally' learned maths, and yet were unable to solve a written problem. At first, formal maths was defined as 'school maths' or specific processes that are taught, and informal maths was defined as 'mental maths', until it was realised that mental maths also takes place in 'formal' maths. The need for precision and correct answers in formal maths was noted as a distinction from informal maths, where approximations seemed to work fine. However, rather than arriving at answers, more questions were raised: Who defines these terms? And why are all practices posited against the formal as though that is the benchmark, when in fact a vast majority did not use these methods? While such issues are probably not immediately resolvable, participants agreed about the need to acknowledge that people do learn a great deal outside of any formal contexts, and programmes need to consider why learners so often do not apply what they formally learn, and revert to what they learn informally.

> "Adopting an ethnographic approach means that we use what they do know and are capable of, but we don't limit them to that context, we try to help them expand to other contexts. This means transferring skills from a contextual model to a somewhat more autonomous model. It seems to be best to learn in a context and then transfer to other contexts, rather than offer autonomous skills out of context or only in a formal educational setting, and then try to apply them in other contexts."

For the participants the possibility of finding links between informal methods and formal schooling was interesting and important. The Plan Bangladesh study gave rise to questions such as 'Why are indigenous games, which involve a number of numeracy tasks, not used in schools? How do the children playing these games fare in school maths? How do the numeracy skills exhibited in the games fit with the school curriculum?'

LITERACY, NUMERACY AND POWER

> "The comfort and familiarity with numbers and the speed with which people calculated depended on the extent to which they encountered numbers and were required to calculate in their everyday lives. This again was determined by social hierarchies of gender, caste and community."

Issues of power and social justice related to literacy and numeracy practices were discussed regularly at the workshops. These were issues of deep concern for the workshop participants, since the generally accepted paradigm is that literacy and numeracy are tools for empowerment. The ethnographic research revealed subtle and sometimes hidden aspects of power relationships in the community that suggested that empowerment was not a simple issue of possessing more skills. It also revealed the potential spaces for subverting such power relations.

Addressing Issues of Gender, Caste and Class

A subject that several of the studies touched upon was the power-laden nature of transitions between traditional and standard measurement systems. Several case studies, such as those of Nirantar, BGVS and Mahila Samakhya, illuminated how class, caste and gender relationships were embedded within practices of calculating, measurement and commerce. But when analysing a situation such practices must be located within the larger reality that 'lower castes' or less-educated people often have to depend on 'upper castes' or educated people in commercial transactions, for loans and employment, and where women were at a further disadvantage.

Workshop participants were concerned that perhaps even if the women were armed with the measurement or calculation skills they needed, they might not have the social power or strength to challenge power relationships. Where women were being cheated

in the marketplace because of a lack of knowledge of the weighing system, it became clear that the solution was not simply to help the women learn how to measure — they must also be socially prepared to challenge the shop-owners in the case of cheating. This is no simple feat, and thus confidence-building strategies and an analysis of these social interactions and issues should be addressed in curricular materials.

Thus many of the module designs focussed first on getting women to critically reflect on unequal social relations and then to bring in skills needed by women to lessen dependence or to question injustices. For instance, the BGVS module outlined in the previous section included a discussion on the exploitative working conditions of women doing home-based embroidery and handicraft work. Workshop discussions then focussed on possible solutions to these issues beyond literacy and numeracy.

Social Relations Determine Numeracy and Literacy Practices

Some studies pointed out the socio-economic and occupational differences in the kinds of maths people knew and the range of their maths skills and abilities. The Mahila Samakhya study, for example, documented several occupation-related numeracy practices, where caste and gender relations are important determinants:

> "We gave the man and woman in one family some seeds to count. The woman counted the seeds in 20s, but couldn't give a total; she simply counted up to 20 seeds and then began again with more seeds, counting up to 20 each time. The husband gave the exact total of 420 seeds. However, the woman knew the measurement (capacity) of household items much more accurately than the husband did."

The study showed that people with higher incomes were more comfortable working with a higher range of numbers, whereas poorer people were only comfortable working within a smaller range of numbers, commensurate with their income. They were, in a way, locked into a 'numeracy trap'.

The Nirantar study mapping the literacy environment found that gender relations determined access to information:

> "Our observations and discussions clearly showed that it is the men in the community who are generally engaged in writing and reading information in public places. This was because public spaces are largely out of bounds for women. In contrast, women who had at least been to the literacy centre had written and drawn on walls within their homes."

This link between socio-economic status and numeracy abilities revealed important areas for curriculum developers to address.

ETHNOGRAPHIC RESEARCH METHODOLOGY

> "Ethnographic research can not only extend us and our understanding but those being researched can also gain from the research process by hearing new values, perspectives and ideas. It is a method that sensitises and validates."

The process of conducting the ethnographic research was a new challenge for many of the workshop participants and, at first, most participants expressed hesitance and uncertainty about conducting the research 'correctly'. But after presenting their own research and hearing others' research at the second workshop, participants expressed appreciation for the process and for what they had learned along the way, along with greater confidence in their research. They expressed eagerness to continue their research, to return to the field to clarify data, to fill in gaps and to try and answer some of the new questions that had arisen from their initial set of data. This became an important theme — that research almost always raises more questions, so repeated trips to the field will probably be necessary to continue to try and elucidate the inner workings of the context and questions being explored.

About Methods

Participants also reflected on the methodologies they had used — such as the pros and cons of structured interviews versus spontaneous research, and the need to do more observations, learn more effective and creative ways of understanding people's methods of numerical calculations, and sharpen skills of discerning patterns from so many disparate examples.

> "When we did our research we tried hard to find out how they calculated. We didn't get much more than 'the answer came from God', or 'from our stomach' or 'it's in our head'. There must be some other ways to get this information!"

Reflexivity, or the awareness of what researchers bring to the process and the 'lenses' through which they interpret situations, is an important premise of ethnographic work. On reviewing the studies participants felt that the research reports could be strengthened by including the researchers' personal background, biases, emphases, etc — that is, acknowledging the perspective the researcher brings to the research.

Empowering the Researched

A very encouraging and exciting realisation for workshop participants was discovering that conducting the ethnographic research itself was a validating and empowering experience *for the people being researched.* When someone who had always identified him/herself as being illiterate and uneducated was able to solve a calculation problem using a method that the researcher could not understand, the person and his/her

family were often visibly proud:

> "In one village, I remember sitting down with a man and trying to understand how he does maths in his head. It was very exciting to be actualising the whole idea of learning from people in the community. It was also positive for him and there was a sense of pride in his family, that this man could educate these 'city people' about how to do maths. For me this is what ethnography is all about."

LOOKING AHEAD

Teachers as Ethnographers

The inclusion of facilitators in conducting ethnographic research was recognised as a possibly important way forward. Only one organisation, Nirantar, had involved facilitators in their research, but their experience was very positive, with the facilitators immediately recognising the potential of the new approach.

> "How did the teachers involved internalise the process or use the insights?"

> "Both at the level of perspective and in very practical ways. After we did the research, ideas began to click and they began to ask, 'Why aren't we using these things in our classes?' We told them it was too early to use this approach, that we were still exploring. But soon after, during a numeracy training they used some local materials and observations they'd made from the research anyway."

During the workshop the need to understand and capitalise on the funds of knowledge of the facilitators was discussed. The World Education, Nepal case study suggested that the numeracy background of the programme's facilitators has a definite impact on the learning of their students, and facilitators who have a background in traditional schooling may find it difficult at first to adapt to taking an ethnographic perspective that embraces students' existing funds of knowledge. Such observations highlighted the need for special training programmes for facilitators, for them to gain experience in doing some ethnography themselves first, in order to fully appreciate the potential of a different approach.

> "We need to think about teacher training. For us it was exciting to include the teachers in the research, but it was also difficult to manage because it was a simultaneous process of research and training. So we need to see how we can rework the regular training we have for our trainers. We need to evolve different methods to communicate the theoretical discussions we've had at the workshop to a grassroots context."

So while the process remains to be fully explored, it is clear that involving facilitators is going to be a vital aspect of taking an ethnographic approach. The other workshop participants found this process very exciting and were hoping to be able to try it.

Ultimately participants recognised that the development of new curricula and materials is a time-consuming process and starting from scratch may not be viable for many organisations. Thus it will be necessary to work with existing literacy/numeracy curricula and pedagogy, and modify them from a social-practice perspective, rather than wait for the time and resources to develop completely new materials. Several organisations felt that as a first step this would be the most feasible strategy.

> "Working in the area of adult literacy and numeracy is a lonely business. There are not that many organisations working in this field. But the workshops have created a sense of community. And even if it's informal, it's important to stay connected and share our experiences and to expand this community."

> "Perhaps one of the most powerful themes was the awareness that we gain in the process, both about ourselves and about those people whose lives we are trying to learn more about and understand better. Those insights may come in surprising ways, each one contributing to a deeper level of awareness that we can bring to our work of serving the marginalised by embracing their knowledge and experiences."

The outcomes of the project were many: a series of rich and interesting research reports coming out of South Asia and written by practitioners; module outlines that can be developed further by the organisations; a documentation of the training process that can be used by other interested parties; and the building of skills and conceptual understanding related to using ethnographic approaches which can be taken forward by the participants and participating organisations.

GLOSSARY

Addah informal chat or discussion, commonly used in Bengali
Bandhej tie-and-dye technique, practised in the Indian states of Rajasthan and Gujarat
Basti neighbourhood, especially in North India; can also refer to a slum
Dalit refers to Hindus who are socially, religiously, economically and politically oppressed and discriminated against in the Indian subcontinent. Usually used to describe persons who come from any lower caste though technically authentic Dalits are kept outside the caste system as unworthy of entering the social and religious life of Hindu society.
District/Mandal and block administrative units in India. States are divided into districts and districts are further divided into mandals or blocks.
Deepawali annual Hindu 'festival of lights'
Haat makeshift market where villagers come to sell their produce
Haath hand
Mandi wholesale market
Panchaang traditional Hindu calendar with details of festivals, auspicious days etc.
Panchayat village-level elected body
Pandit learned man, of the Brahmin caste
Parchi note on a small piece of paper, or informal receipt
Scheduled Castes communities that are accorded special status by the Constitution of India. Also known as Dalits.

READING LIST

Baker, D.A. 'Funds of Knowledge and Numeracy', in *Reflect: Journal of NRDC*. London: Institute of Education/NRDC, 2005.

Baker, D.A., Street B.V. and Tomlin A. 'Mathematics as Social: Understanding Relationships between Home and School Numeracy Practices' in *For the Learning of Mathematics.* 2003.

Barton, D. and Hamilton, M. 'Ethnography in Practice', Ch. 4 of *Local Literacies: Reading and Writing in One Community.* London: Routledge, 1998.

Green, J. and Bloome, D. 'Ethnography and Ethnographers of and in Education: A Situated Perspective' in Flood J., Heath S. and Lapp, D. (eds.), *A Handbook of Research on Teaching Literacy through the Communicative and Visual Arts* (pp 181-202). New York: Simon and Schuster Macmillan, 1997.

Gutstein, E. and Petersen, B. 'Rethinking Mathematics: Teaching Social Justice by the Numbers' in *Rethinking Schools.* Milwaukee, USA, 2005.

Jeffrey, B. and Troman, G. 'Time for Ethnography' in *British Educational Research Journal Vol. 30, No. 4*, pp. 535-548. August 2004.

Lareau, A. and Schultz, J. *Journeys through Ethnography: Realistic Accounts of Fieldwork*. Boulder, Colorado: Westview Press, 1996.

Mace, J., 'Research as Practice', pp. 75-83 in Fowler, E. and Mace, J. *Outside the Classroom; Researching Literacy with Adult Learners*. Leicester: NIACE, 2005.

Mitchell, J. 'Typicality and the Case Study', pp. 238-241 in Ellen, R.F. (ed.) *Ethnographic Research: A Guide to Conduct.* New York: Academic Press, 1984.

Moll, L., Amanti, C., Neff D. and Gonzalez N. 'Funds of Knowledge for Teaching: Using a Qualitative Approach to Connect Homes and Classrooms', in *Theory into Practice*, XXXI (2), pp 131-141. 1992.

Nirantar, *Windows to the World: Developing a Curriculum for Rural Women.* New Delhi: Nirantar, 1997.

Papen, Uta. *Adult Literacy as Social Practice: More than Just Skills.* London: Routledge, 2005.

Rampal, A., Ramanujam, R., Saraswati, L.S. *Numeracy Counts.* Mussoorie, India: National Literacy Resource Centre, 1998.

Rogers, A. *Adults Learning for Development.* London: Cassell, 1992.

Saraswathi L.S. 'Practices in Enumeration by Counting and Computation of Sets of Objects in Rural Tamil Nadu: Implications for Adult Education Programmes', unpublished.

Silverman, D. *Interpreting Qualitative Data*, Chapter 3 and 4. London: Sage, 1993.

Smyth, J. *Teachers as Collaborative Learners.* Buckinghamshire, UK: Open University Press, 1991.

Street, B. 'Review Article on Books on Ethnographic Research', *Journal of Research in Reading*, 16(2) Special Issue 'The New Literacy Studies'. September, 1993.

Street, B. and Lefstein, A. *Literacy: An Advanced Resource Book.* London: Routledge, 2007.

Street, B. *Literacy and Development.* London: Routledge, 2001.

Street, B.V., Rogers, A. and Baker, D.A. 'Adult Teachers as Researchers: Ethnographic Approaches to Numeracy and Literacy as Social Practices in South Asia', in *Convergence*, ***XXXIX*** *(1),* pp 31-44. Montevideo, Uruguay: Journal of the International Council for Adult Education, 2006.

Websites (for numeracy)

www.nrdc.org.uk (for reports on research on adult education in the UK)

www.maths4life.org (for reports and research on adult numeracy in the UK)

PARTICIPATING ORGANISATIONS

NIRANTAR (India)
(See Partner Organisations)

PLAN (Bangladesh)
Plan is an international humanitarian, child-focussed development organisation without religious, political or governmental affiliation working in 61 countries. Plan began working in Bangladesh in 1994. Plan Bangladesh staff work directly with communities and the poorest children in a continuous action-and-reflection cycle.
Address House # CWN (B) 14, Road # 35, Dhaka 1212, Bangladesh **Tel** 880-2-9861599, 9860167, 8826209, 8817589 **Fax** +880-2-9861599 **Email** plan.bangladesh@plan-international.org **Web** www.plan-international.org

WORLD EDUCATION (Nepal)
Founded in 1951, World Education is a private voluntary organisation that provides training and technical assistance in non-formal education across a wide array of sectors. World Education has worked in over 50 countries. World Education Nepal's mission is to help rural people of Nepal improve their livelihoods through a community-oriented and participatory development process. Non-formal literacy is its main focus.
Address P.O. Box 937, Kathmandu, Nepal **Tel** 977-1-4422385/86 **Fax** 977-1-4415303 **Email** deeva@wei.org.np **Web** www.worlded.org

BHARAT GYAN VIGYAN SAMITI (India)
Bharat Gyan Vigyan Samiti (BGVS) was set up in 1989 with the objective of creating an environment conducive to literacy. In the 1990s BGVS was involved with the national literacy campaigns. Today, BGVS links literacy and continuing-education work with other development and social-justice issues. BGVS has units in 22 states and union territories of India. Its national network, Samata, works for the empowerment of women.
Address YWCA Hostel No. 2 (basement), Avenue 21, G Block, Saket, New Delhi 110017, India **Tel** 91-11-26569943 **Email** bgvs_delhi@yahoo.co.in, komalsriv@gmail.com

ANDHRA PRADESH MAHILA SAMATHA SOCIETY (India)

Launched in the state of Andhra Pradesh in 1993, APMSS implements the Mahila Samakhya programme of the Government of India. It operates in 12 districts, covers 2,833 villages and reaches one lakh women. APMSS works on social and gender issues as well as education, health, governance, natural resources and asset building.
Address 12-13-485/5, Nagarjuna Nagar, Tarnaka, Secunderabad, India **Tel** 91-40-27150233 **Fax** 91-40-27150557 **Email** apmss_ms@yahoo.co.in **Web** www.apmss.org

LAYA (India)

Laya is a non-government organisation working mainly with tribal communities in North Andhra Pradesh since 1985. Their work is in creating learning opportunities for tribal communities to effect social change.
Address 502 Kurupam Castle, near Walter RTC Dept., East Point Colony, Visakhapatnam 530 017, Andhra Pradesh, India **Tel** 91-891-2530071, 2735332 **Fax** 91-891-2784341 **Email** layarc@gmail.com, laya@sancharnet.in **Web** www.laya.com

BUNYAD FOUNDATION (Pakistan)

Formed in 1994, Bunyad's primary focus is literacy and non-formal education of underprivileged groups like child labour, girls and young women in rural areas. It also works with public-sector schools. Bunyad works in partnerships with local communities, district/provincial and federal governments.
Address 24.5 km Badian Road, near Village Theatre Post Office Burki, Lahore Cantt., Pakistan **Tel** 92-42-5600621, 5600692 **Fax** 92-42-5600293 **Email** bunyad@brain.net.pk **Web** www.bunyad.org.pk

GRAM VIKAS (India)

Gram Vikas is a rural development organisation, working with poor and marginalised communities in Orissa since 1979. Gram Vikas' Mission is to promote processes which are sustainable, socially-inclusive and gender-equitable. The organisation currently serves a population of over 200,000 across 557 villages in 17 districts of Orissa.
Address PO Mahuda Village, via Berhampur, Dist. Ganjam 760002, Orissa, India **Tel** 91-680-2261863, 2261875 **Fax** 91-680-2261862 **Email** info@gramvikas.org **Web** www.gramvikas.org

SEVA MANDIR (India)

Seva Mandir works in the rural areas of Udaipur and Rajsamand districts in Rajasthan. Established in 1969, Seva Mandir's programmes include institution-building, women's empowerment, early childcare and development, health, education and natural-resource management. It has run various literacy programmes since its inception.
Address Old Fatehpura, Udaipur 313001, Rajasthan, India **Tel** 91-294-2450960, 2451041 **Fax** 91-294-2450947 **Email** edu@sevamandir.org **Web** www.sevamandir.org

PARTNER ORGANISATIONS

ASIAN SOUTH PACIFIC BUREAU OF ADULT EDUCATION (INDIA)

ASPBAE's primary purpose is to strengthen the theory and practice of adult education as a contribution to individual and social development. ASPBAE's membership covers a diversity of groups and individuals involved in formal and non-formal education, working with and through government agencies, universities, NGOs, community groups, trade unions, indigenous peoples, women's organisations and the media.
Address ASPBAE Secretariat, c/o MAAPL, 9th Floor, Eucharistic Congress Building No.3, 5 Convent Street, Colaba, Mumbai 400039, India **Tel** 91-22-22021391, 22816853 **Fax** 91-22-22832217 **Email** aspbae@vsnl.com **Web** www.aspbae.org

NIRANTAR, A RESOURCE CENTRE FOR GENDER AND EDUCATION (INDIA)

Founded in 1993, Nirantar has worked towards fulfilling its mandate of empowering women through education. Nirantar has sought to achieve this through direct field interventions, designing innovative programmes, training and capacity-building, creating educational resources and research and advocacy work. Nirantar is involved with the women's movement and other democratic rights movements and brings concerns central to these movements into its educational work.
Address B-64 Sarvodaya Enclave, Second Floor, New Delhi 110017, India **Tel** 91-11-26966334 **Fax** 91-11-26517726 **Email** nirantar@vsnl.com **Web** www.nirantar.net

UPPINGHAM SEMINARS IN DEVELOPMENT

A small informal group based in the UK, its main objective is to organise participatory seminars and workshops on the general theme of education in developing societies. The focus is on non-formal and adult basic education in developmental contexts but the field covered has been wider including language, social exclusion and managing diversity. It grew out of work undertaken in the 1990s by Education for Development (UK). Its convenor is Professor Alan Rogers.
Address Hill House, 8 Station Road, Reepham Norfolk NR10 4LF, U.K. **Tel** 44-1603-870491 **Email** info@uppinghamseminars.org **Web** www.unppinghamseminars.org